

## 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD534 - GOSHEN RIM

HUNT AREAS: 15-16, 55, 57

PREPARED BY: MARTIN HICKS

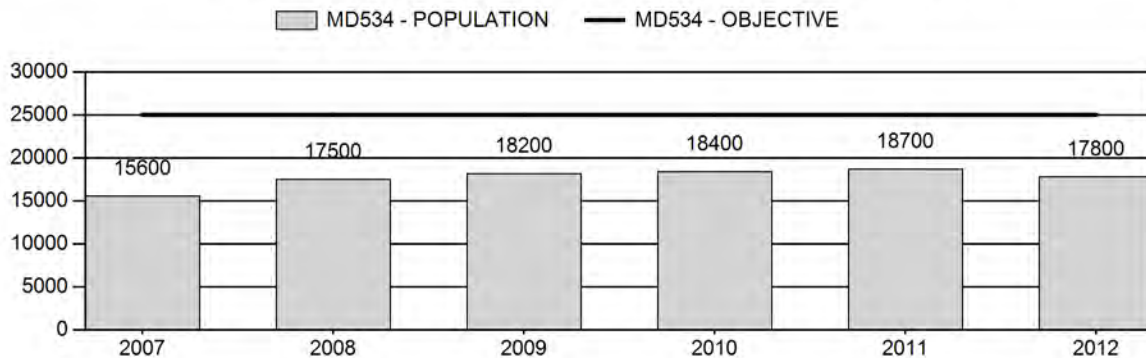
	<u>2007 - 2011 Average</u>	<u>2012</u>	<u>2013 Proposed</u>
Population:	17,680	17,800	19,900
Harvest:	766	939	1,000
Hunters:	1,616	1,820	1,870
Hunter Success:	47%	52%	53%
Active Licenses:	1,675	1,876	1,920
Active License Percent:	46%	50%	52%
Recreation Days:	6,182	6,618	6,750
Days Per Animal:	8.1	7.0	6.8
Males per 100 Females	32	32	
Juveniles per 100 Females	63	50	

Population Objective: 25,000  
 Management Strategy: Recreational  
 Percent population is above (+) or below (-) objective: -28.8%  
 Number of years population has been + or - objective in recent trend: 20  
 Model Date: 02/26/2013

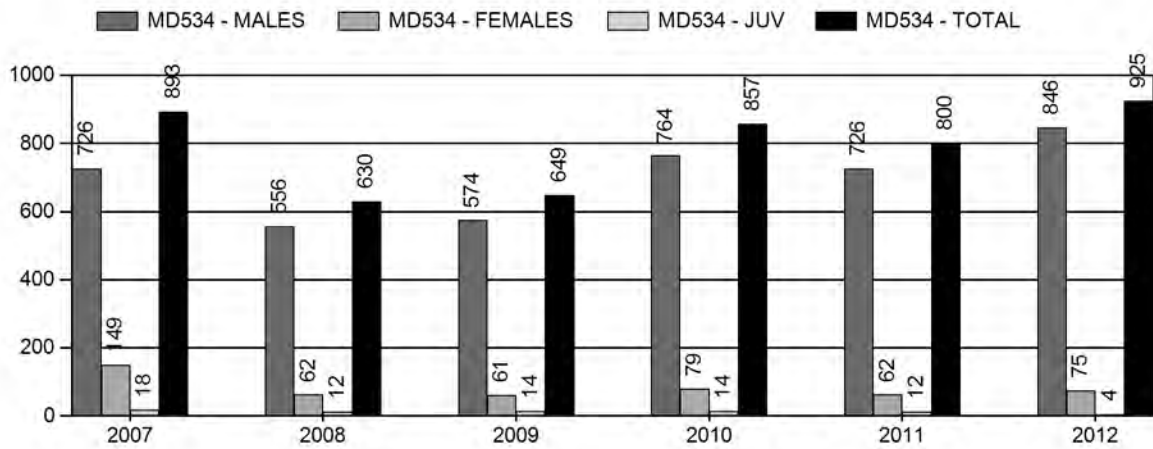
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0.8%	1.6%
Males $\geq$ 1 year old:	21%	18%
Juveniles (< 1 year old):	0%	0%
Total:	6%	6%
Proposed change in post-season population:	-5%	+11%

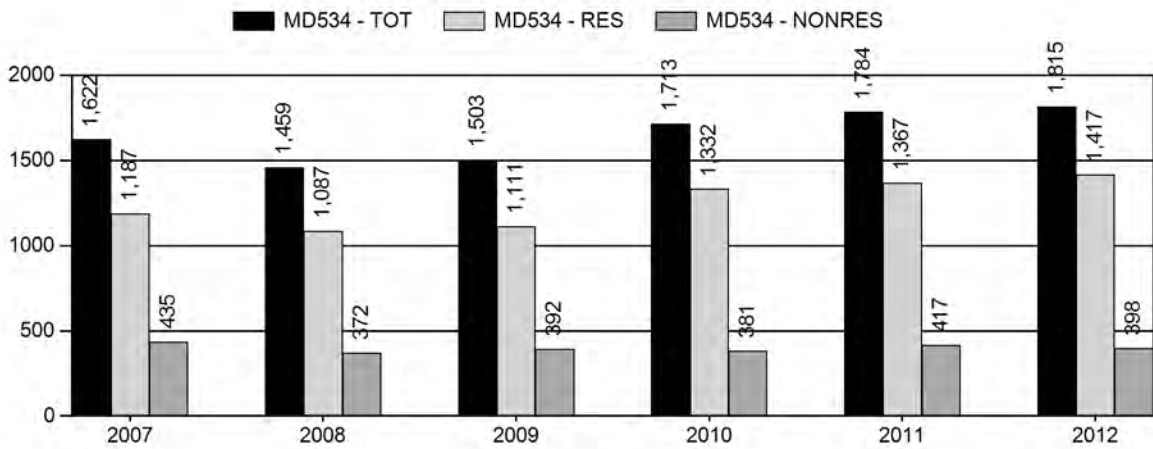
## Population Size - Postseason



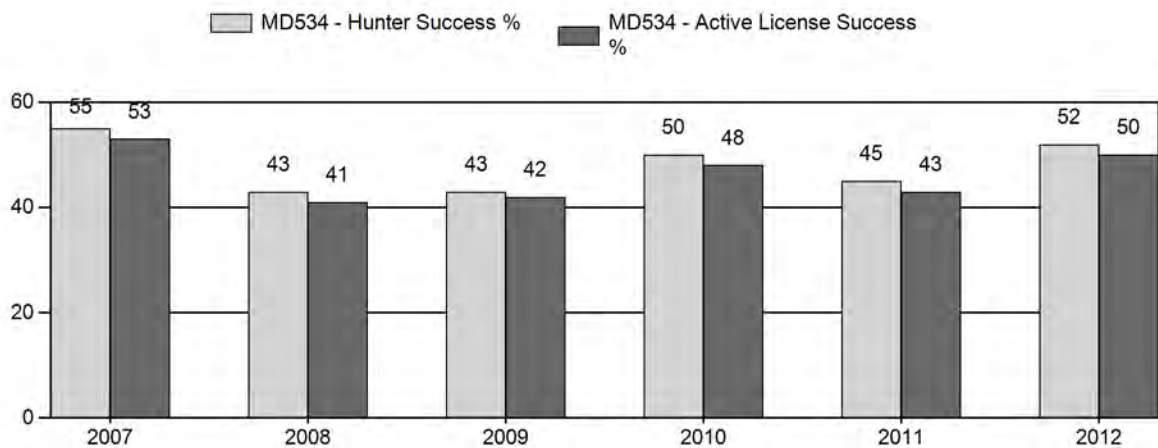
## Harvest



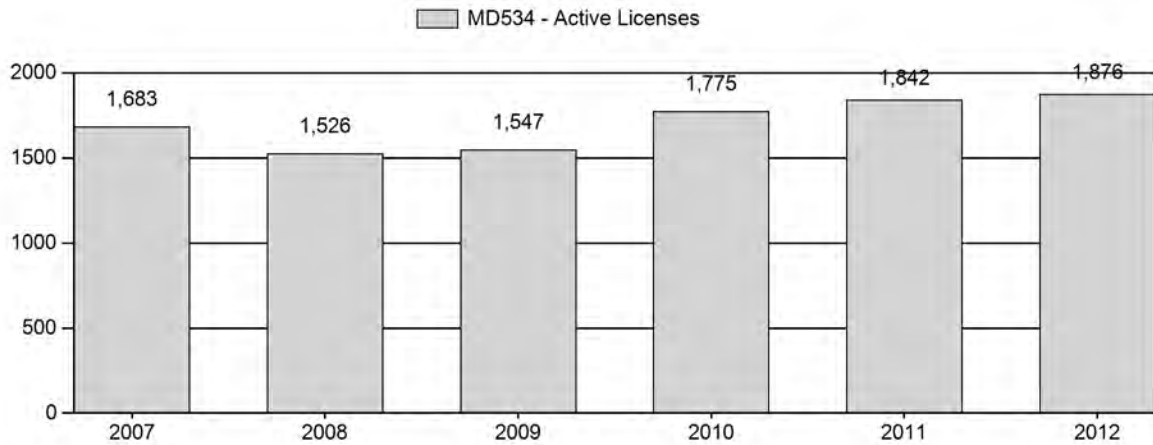
## Number of Hunters



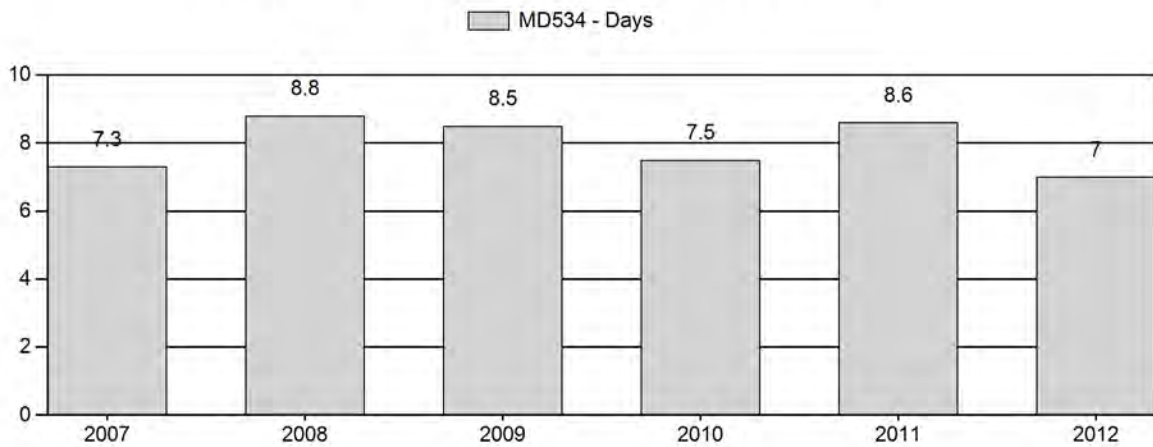
## Harvest Success



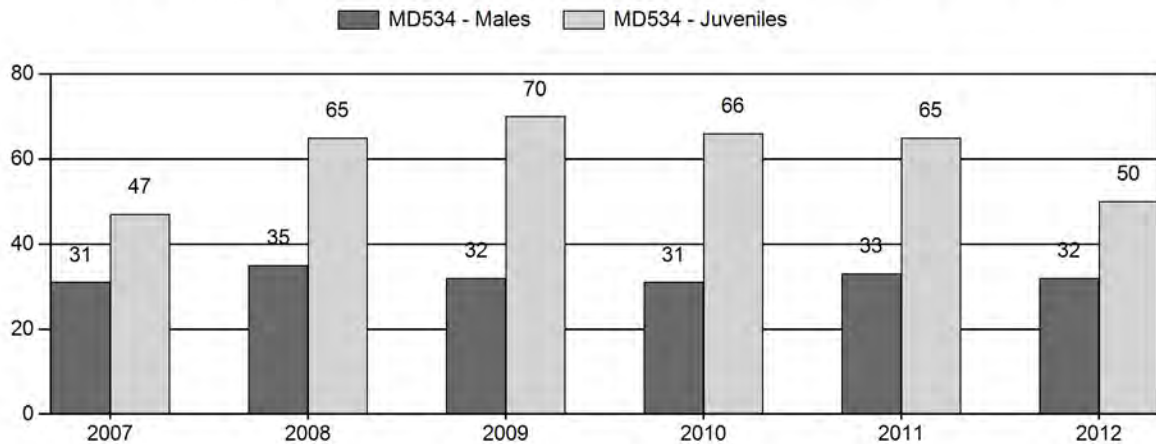
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD534 - GOSHEN RIM

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	15,600	57	118	175	17%	566	56%	267	26%	1,008	1,016	10	21	31	± 3	47	± 4	36
2008	17,500	57	106	163	18%	462	50%	299	32%	924	1,143	12	23	35	± 4	65	± 6	48
2009	18,200	44	98	142	16%	442	49%	311	35%	895	1,210	10	22	32	± 4	70	± 7	53
2010	18,400	80	125	205	16%	668	51%	440	34%	1,313	1,123	12	19	31	± 3	66	± 5	50
2011	18,700	116	226	342	17%	1,031	51%	665	33%	2,038	1,364	11	22	33	± 3	65	± 4	48
2012	17,800	121	192	313	18%	977	55%	487	27%	1,777	1,076	12	20	32	± 3	50	± 3	38

## 2007 - 2012 Harvest Age Structure

for Mule Deer Herd MD534 - GOSHEN RIM

Year	Males									Females									Herd
	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Tot
2007	0	0	0%	12	100%	12	0	0	12	0	0	0%	2	100%	2	0	0	2	14
2008	0	3	27%	4	57%	7	4	2	13	0	0	0%	0	0%	0	0	0	0	13
2009	0	0	0%	10	100%	10	0	1	11	0	0	0%	0	0%	0	0	1	1	12
2010	0	0	0%	14	100%	14	1	0	15	0	1	100%	0	0%	1	0	0	1	16
2011	0	3	13%	15	83%	18	5	0	23	0	0	0%	0	0%	0	2	0	2	25
2012	0	5	14%	16	76%	21	14	0	35	0	0	0%	1	100%	1	3	0	4	39

\* Percent of aged animals (including unaged adults but excluding juveniles) 1 1/2 years old

^ Number of animals two years old and older. Animals aged older than two (excluding unaged adults) are lumped into this two plus category

\*\* Percent of aged animals (not including juveniles or unaged adults) two years old or older

++ includes juveniles

+++ Unaged adults - unaged animals older than yearlings

## 2013 HUNTING SEASONS

### GOSHEN RIM MULE DEER HERD UNIT (MD534)

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
15		Oct. 1	Oct. 15		General license; antlered mule deer or any white-tailed deer.
16	6	Oct. 1	Oct. 15	25	Limited quota license; doe or fawn
		Oct. 1	Oct. 15		General license; antlered mule deer or any white-tailed deer
	2	Nov. 1	Dec. 31	50	Limited quota licenses; any deer valid east of U.S. Highway 85
	6	Nov. 1	Dec. 31	100	Limited quota licenses; doe or fawn deer east of U.S. Highway 85
55		Oct. 1	Oct. 11		General license; antlered mule deer or any white-tailed deer.
	6	Oct. 1	Dec. 31	100	Limited quota licenses; doe or fawn in Goshen County and north of the Laramie River in Platte county
57		Oct. 1	Oct. 11		General license; antlered mule deer or any white-tailed deer.
	6	Oct. 1	Dec. 31	75	Limited quota licenses; doe or fawn
Region T				500	
Archery		Sep. 1	Sep. 30	Refer to Section 3 of this Chapter	

Hunt Area	Type	Quota change from 2012
16	6	+50
55	6	+50
57	6	+25
<b>Total</b>	<b>2</b>	<b>0</b>
	<b>6</b>	<b>+125</b>
	<b>Region T</b>	<b>0</b>

#### Management Evaluation

**Current Management Objective: 25,000**

**2012 Post-season Population Estimate: ~17,800**

**2013 Post-season Population Estimate: ~19,900**

#### Herd Unit Issues

The management objective for the Goshen Rim Mule Deer Herd Unit is a post-season population objective of 25,000 mule deer. The management strategy is a recreational management with a post-season buck ratio range of 20-29 bucks:100 does. The objective and management strategy were last revised in 1998. The herd objective was reviewed during the winter and spring of 2013. Based on public input a reduction in the postseason numeric objective from 25,000 to 20,000 along with the combination of the four hunt areas is proposed to go to the Commission this July.

This herd unit is comprised of over 90% private land. The majority of sportsmen and landowners would like to see more deer. Based on very conservative seasons we have not been able to increase this herd past 20,000 pronghorn for 20+ years. Public input was gathered and support was there to reduce the objective from 25,000 to a more realistic and attainable management objective of 20,000. There only opportunity for antlered mule deer hunters is restricted to the Broom Creek Hunter Management Areas, walk-in areas and state land north of Chugwater. Buck ratios throughout the herd unit are at the upper level of the recreation management strategy of 20-29 bucks: 100 does, but in reality they are more likely on the lower level on public lands. This can be somewhat frustrating for resident and nonresident hunters. Region T licenses have been at 500 since 2002, but have yet to sell out, which most likely is due to 90% of the occupied mule deer habitat is found on private land. Wind development is scheduled to take place by 2020. We have been working with the wind industry on pre-construction baseline data and will be in conversations regarding any mitigations needed for loss of habitat.

### **Weather**

Weather during 2012 and into 2013 was extremely dry and warmer than normal. Portions of Southeast Wyoming received little summer precipitation. Drought conditions resulted in substantially lower fawn production, 50 fawns:100 does compared to the ten-year average of 62 fawns per 100 does. The winter of 2012-13 has been mild with little snow fall. There have been periods of below normal temperatures but then they swing back to days > 50 degrees Fahrenheit. Ungulates went into the winter in poor body condition due to the drought above normal winter mortality could occur if normal to above average winter conditions exist from March to May. The spring/summers of 2010 and 2011 received above normal precipitation that resulted in fawn to doe ratios of 66:100 both years, which was similar to the long term average of 62:100. However, the winter of 2010 experienced above normal snow levels resulting in poor over winter survival. The winter of 2011 was normal within this geographic area. Refer to the following websites for weather data: <http://www.ncdc.noaa.gov/temp-and-precip/time-series/> and <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html>).

### **Habitat**

Habitat Transects were initiated in the Goshen Rim Herd Unit in 2001. The two transects that were established have not provided sufficient data to make reliable assumptions of habitat quality. In 2012 the two transect were eliminated for lack of quality data. Shrub data that was collected indicated Mountain mahogany (*Cercocarpus montanus*) and skunkbush sumac (*Rhus trilobata*) have not provided data that could be interpreted with confidence. What was gleaned from 10 years of data is these two shrub species are underutilized, have little production, low nutrient quality and mule deer are keying in on other species such as Wyoming sagebrush (*Artemisia tridentate*), fringed sagewort (*Artemisia frigid*), silver sagebrush (*Artemisia cana*) and mostly crop fields (winter wheat, alfalfa, corn, soy beans, sunflowers). Refer to Appendix B for Habitat Data. Habitat treatments have been explored but have acquired little support from landowners. Unless there is a wide scale disturbance to shrub communities along the Goshen Rim and north through the Rawhide Hills (i.e. wild fire or prescribed fire) mule deer will continue to be dependent on agriculture fields. There have been several wildfires within the Guernsey Guard Camp and north of the community of Hartville in the last couple of years that burned over 16,000 acres. This helped to remove conifer encroachment and will hopefully rejuvenate shrub communities that mule deer traditionally depend on for their winter diet needs. Moisture is indicative to leader production. Leader growth rates increased dramatically in 2010 and 2011 compared to 2012 when there was little to no leader production. The reader is referred to the 2012 Strategic Habitat Plan Annual Report for additional habitat information within the Laramie Region

### **Field Data**

The 2012 post-season population estimate was about 17,800 with the population stable to slowly trending up. Restricted access makes it difficult to manage this herd. Access is driven by isolated damage with small parcels of public, walk-in areas and the Broom Creek Hunter Management Area. General licenses have focused harvest on the male segment of the population with little effort to remove females. Typically there have been around 200 Type 6 licenses available between the 4 hunt areas. On average less than 1 percent of the population of the females are harvested. Chronic wasting disease is not as prevalent in this herd when compared to the Laramie Mountains Mule Deer and the South Converse Mule Deer Herd Units, but the long-term prevalence rate average of 10% is most likely affecting population performance to an unknown extent.

### **Harvest Data**

Hunter success in this herd unit averaged around 50% which is similar to the 2012 hunter success of 52%. Long-term hunter effort averages 7.9 days per harvest and is higher than the 2012 effort of 7.0 days per harvest. Access continues to be an issue in this herd unit with 92% of the occupied habitat consisting of private land. The only major access is the PLPW's Hunter Management Program on the Guernsey Guard Camp, and walk-in areas, mainly in Hunt Area 55. Access is driven by damage, which is the reason for the few Type 6 licenses available to hunters. Access for male harvest is extremely difficult unless a hunter is willing to pay a trespass fee or hire an outfitter. Private land ratios inflate overall buck ratios to higher end of the recreational management strategy. Based on personnel and hunter observation the buck ratios on accessible lands are more likely on the lower end of the management strategy. Typically 15% of the harvest is comprised of yearling mule deer, which is not out of the normal harvest rates. However, on public land the majority of male deer are typically 2-3+ years old. On private land where access is controlled, the average age is 4-6+ years old. Public land hunters appear to harvest younger bucks, which would support a lower buck ratio on public lands. For the first time in 2012 we started to collect antler class data (Appendix C). There were 30 deer sampled with 50% class I, 40% Class II and 10% Class III. Class I and II deer are typically 1-3 years old, which is typical age classes harvested on public land. The hunter satisfaction survey showed that 66% of the hunters were either satisfied or very satisfied, which is somewhat surprising given the negative comments received from hunters by field personnel. Hunters commented on not being able to find bucks and the overall lack of deer.

### **Population**

This herd has been stable to slightly increasing over the past ten years but continues to remain well below the objective of 25,000. The "Time-Specific Juvenile and Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. The model did not have the lowest AIC score of all the models but was only slightly higher and given the better fit of data and perceived population trend by personnel, landowners and hunters this seemed like the most plausible model. Juvenile survival was adjusted to the range of .6-.9. which allowed for a better model fit based on long-term population observation trends. The larger range of juvenile survival of .4-.9 drove the population below perceived estimations. It appears this is an adequate model given available data. Hunters and landowners would like to see a continued increase in the herd, but given poor fawn production, which is below the level of 66 fawns:100 does (Unsworth et al. 1999) needed for population growth combined with CWD, poor shrub conditions an increase is not likely in the near future.



Hunting seasons in this herd unit have traditionally started on October 1 and run for 11 to 14 days for the general season with limited doe/fawn harvest opportunity running later. In an attempt to address damage issues we have increased doe/fawn licenses in Hunt Areas 16 and 55. Hunters and landowner for the most part would like to see the population grow, so we will continue with conservative seasons. In order to maintain quality bucks on private land and provide some opportunity on public lands an 11 day season in Hunt Areas 55 and 57 will remain.

If we attain the projected harvest of 1,000 deer and normal fawn production the mule deer population will slowly increase towards the management objective. We predict a 2013 post-season population of about 19,900. Region T licenses are recommended to remain at 500. Poor access does not warrant an increase at this time.

### **Management Summary**

In summary we have set a more realistic objective of 20,000 mule deer to try and manage for the 2014. The 2013 season is designed to try and move the population towards 20,000 mule deer. Access will continue to be a issue as it relates to both antlered deer and doe/fawn harvest. Access in Hunt Area 16 was increase for Type 6 license holders, but there is still opposition from landowners to open up all of Hunt Area 16 for doe/fawn mule deer harvest. Given poor habitat conditions, poor fawn recruitment, CWD and limited doe harvest we will most likely be at or slightly below the new objective of 20,000 mule deer.

Literature cited:

**Unsworth, JW, Pac DF, White GC, and Bartmann BC:** Mule deer survival in Colorado, Montana, and Idaho. J. Wildl. Manage. 63(1):315-326, 1999

INPUT

Species:

Deer

Biologist:

Martin Hicks

Herd Unit & No.:

Goshen Rim MD534

Model date:

02/25/13

☐ Clear form

MODELS SUMMARY					Check best model to create report		Notes
					Relative AICc		
					Fit		
CJ,CA	Constant Juvenile & Adult Survival				126	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival				82	<input type="checkbox"/> SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival				41	<input checked="" type="checkbox"/> TSJ,CA Model	

Population Estimates from Top Model											
Year	Posthunt Population Est.		Trend Count		Predicted Prehunt Population			Predicted Posthunt Population			Objective
	Field Est	Field SE			Juveniles	Total Males	Females	Juveniles	Total Males	Females	
1993					4376	2985	7512	4291	1507	6608	14500
1994					3800	2551	6767	3720	1244	5839	14500
1995					4172	2185	5983	4119	1126	5531	14500
1996					4317	2307	5947	4317	1400	5830	14500
1997					4287	2452	6113	4262	1667	5937	14500
1998					4082	2656	6186	4080	1677	6005	14500
1999					5165	3222	6799	5133	1698	6574	14500
2000					4601	3025	7055	4581	1738	6727	25000
2001					3287	2810	6934	3256	1696	6655	25000
2002					3711	2862	6960	3701	1840	6769	25000
2003					5029	3186	7260	4988	2084	7021	25000
2004					4436	3967	8047	4411	2856	7779	25000
2005					6203	4153	8222	6187	2934	8094	25000
2006					4080	4364	8629	4067	3007	8532	25000
2007					4132	4315	8882	4112	2773	8718	25000
2008					5830	4142	9056	5816	2696	8987	25000
2009					6422	3973	9173	6407	2678	9105	25000
2010					6181	4135	9447	6166	2878	9360	25000
2011					6152	4228	9586	6139	3079	9517	25000
2012					4804	4386	9707	4800	3436	9629	25000
2013					5981	4999	10118	5980	3883	10041	25000
2014											
2015											
2016											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

Survival and Initial Population Estimates

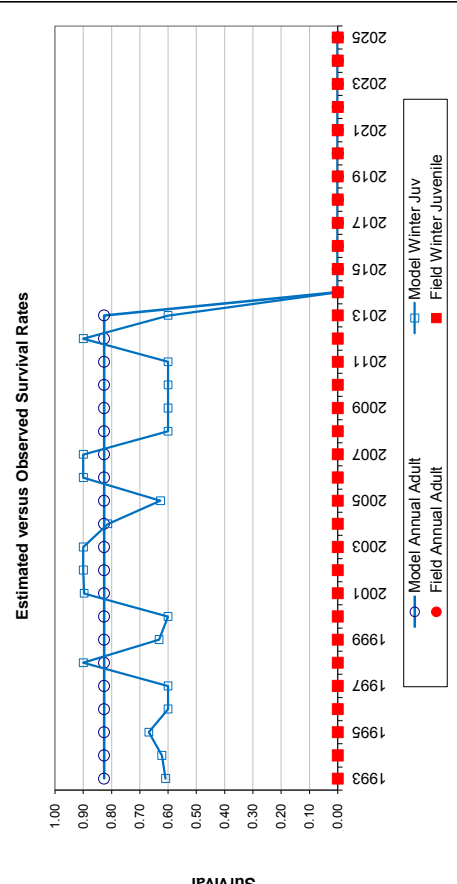
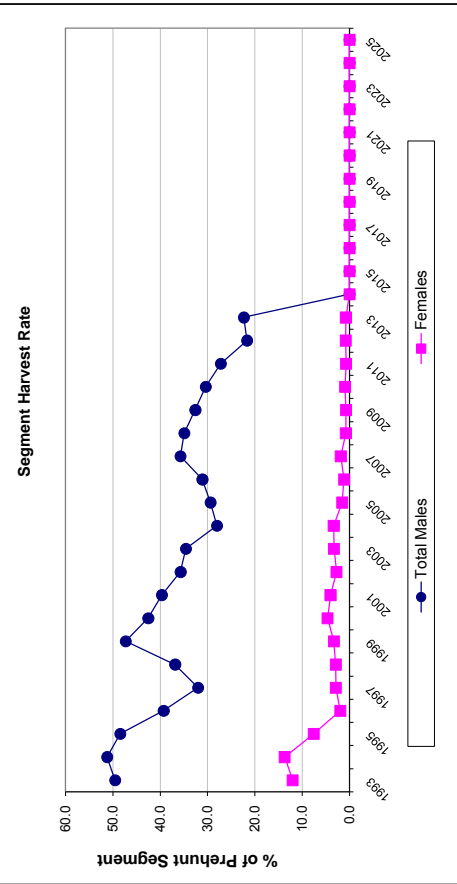
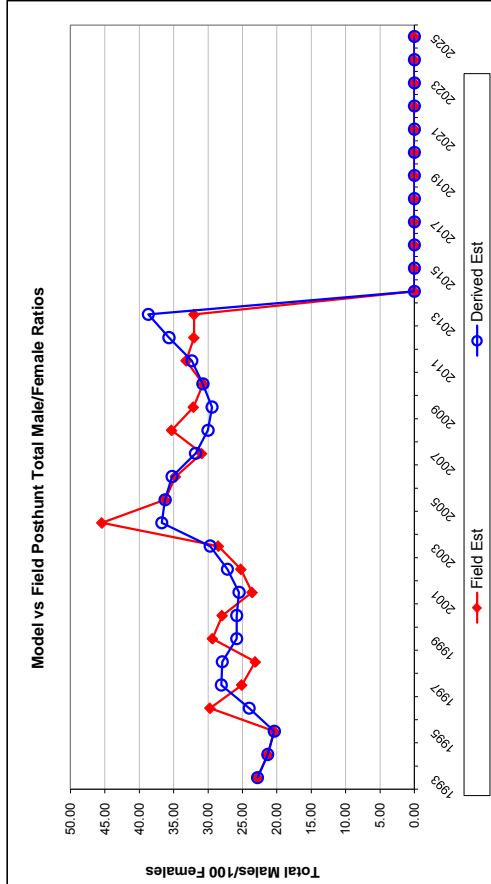
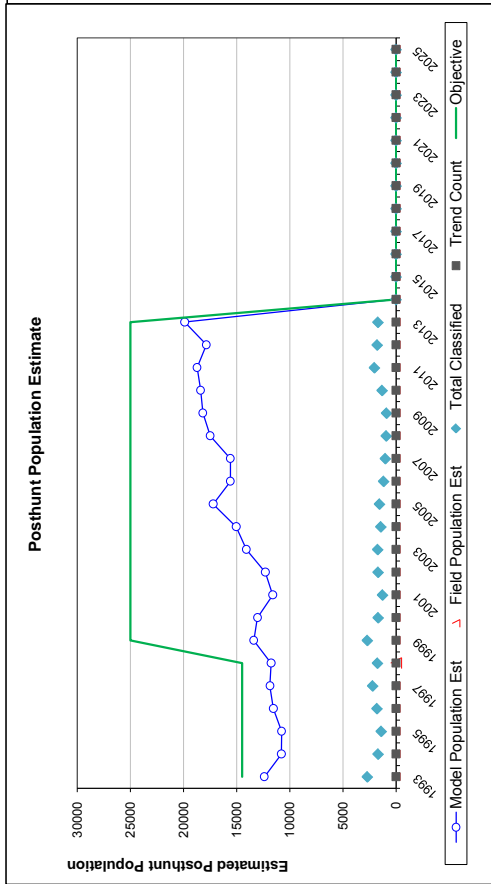
Year	Winter Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.61		0.83	
1994	0.62		0.83	
1995	0.67		0.83	
1996	0.60		0.83	
1997	0.60		0.83	
1998	0.90		0.83	
1999	0.63		0.83	
2000	0.60		0.83	
2001	0.90		0.83	
2002	0.90		0.83	
2003	0.90		0.83	
2004	0.81		0.83	
2005	0.63		0.83	
2006	0.90		0.83	
2007	0.90		0.83	
2008	0.60		0.83	
2009	0.60		0.83	
2010	0.60		0.83	
2011	0.60		0.83	
2012	0.90		0.83	
2013	0.60		0.83	
2014				
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Adult Survival =		0.826
Initial Total Male Pop/10,000 =		0.151
Initial Female Pop/10,000 =		0.661

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

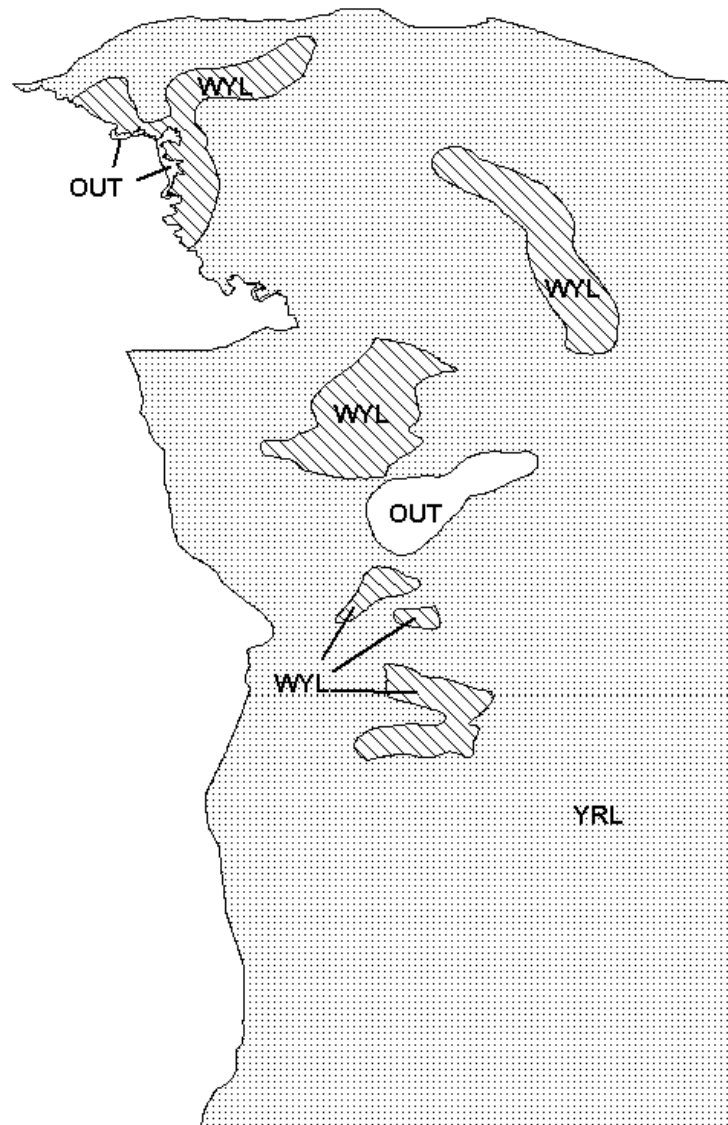
Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Segment Harvest Rate (% of Prehunt Segment)						
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993		64.93	2.72	22.80	22.80	1.39	77	0	1344	822	2243	49.5	12.0
1994		63.72	3.38	21.31	21.31	1.68	72	0	1188	844	2104	51.2	13.7
1995		74.48	4.26	20.36	20.36	1.85	48	0	963	411	1422	48.5	7.6
1996		74.04	3.82	24.02	29.71	2.09	0	0	824	106	930	39.3	2.0
1997		71.79	3.32	28.08	25.09	1.67	4	0	714	160	878	32.0	2.9
1998		67.94	3.53	27.93	23.12	1.76	2	0	890	164	1056	36.9	2.9
1999		78.08	3.26	25.83	29.35	1.71	29	0	1386	205	1620	47.3	3.3
2000		68.10	3.65	25.83	27.94	2.04	18	0	1170	298	1486	42.5	4.6
2001		48.92	3.14	25.49	23.58	1.99	29	0	1013	253	1295	39.6	4.0
2002		54.68	3.00	27.18	25.21	1.83	9	0	929	174	1112	35.7	2.7
2003		71.05	3.74	29.68	28.49	2.05	37	0	1002	217	1256	34.6	3.3
2004		56.70	3.54	36.72	45.42	3.05	23	0	1010	244	1277	28.0	3.3
2005		76.43	4.29	36.24	36.24	2.59	15	0	1109	116	1240	29.4	1.6
2006		47.66	3.31	35.24	34.74	2.70	12	0	1234	88	1334	31.1	1.1
2007		47.17	3.50	31.80	30.92	2.67	18	0	1402	149	1569	35.7	1.8
2008		64.72	4.80	29.99	35.28	3.21	12	0	1315	62	1389	34.9	0.8
2009		70.36	5.21	29.41	32.13	3.10	14	0	1177	61	1252	32.6	0.7
2010		65.87	4.04	30.75	30.69	2.45	14	0	1143	79	1236	30.4	0.9
2011		64.50	3.21	32.35	33.17	2.07	12	0	1045	62	1119	27.2	0.7
2012		49.85	2.76	35.68	32.04	2.08	4	0	864	71	939	21.7	0.8
2013		59.55	3.27	38.67	32.02	2.18	5	0	850	145	1000	22.3	0.8
2014													
2015													
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



Mule Deer (MD534) - Goshen Rim  
HA 15, 16, 55, 57  
Revised - 97



## 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD537 - LARAMIE MOUNTAINS

HUNT AREAS: 59-60, 62-64, 73

PREPARED BY: MARTIN HICKS

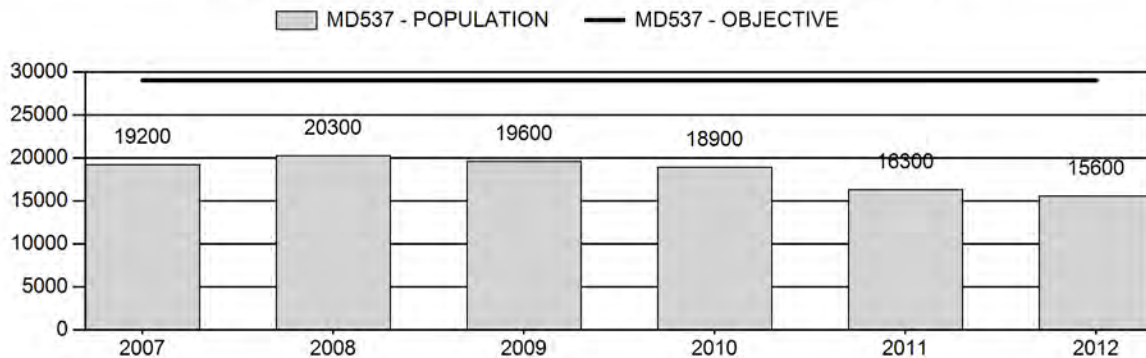
	<u>2007 - 2011 Average</u>	<u>2012</u>	<u>2013 Proposed</u>
Population:	18,860	15,600	16,200
Harvest:	1,395	1,007	1,040
Hunters:	2,380	1,957	2,000
Hunter Success:	59%	51%	52 %
Active Licenses:	2,472	2,043	2,075
Active License Percent:	56%	49%	50 %
Recreation Days:	10,735	8,534	8,700
Days Per Animal:	7.7	8.5	8.4
Males per 100 Females	39	35	
Juveniles per 100 Females	60	59	

Population Objective:	29,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-46.2%
Number of years population has been + or - objective in recent trend:	20
Model Date:	02/26/2013

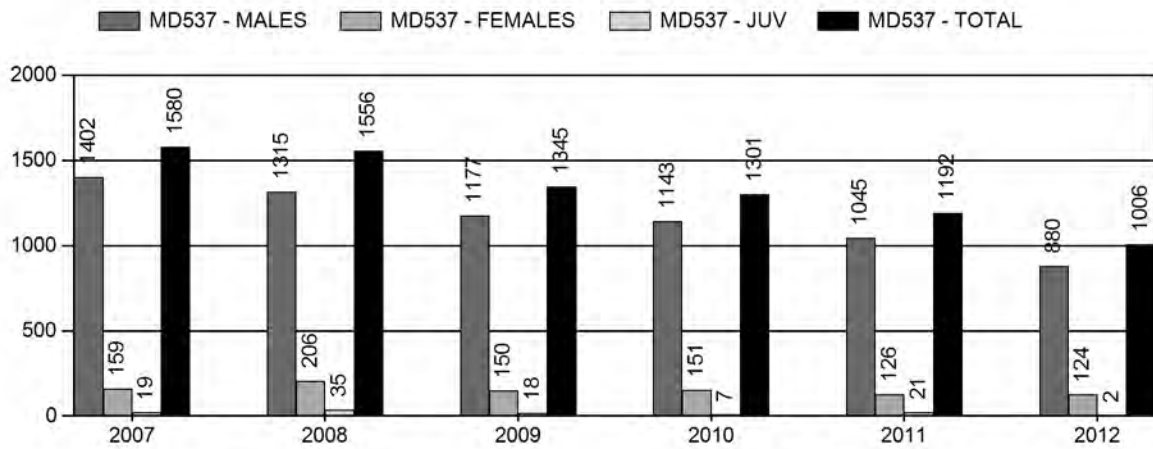
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	1.6%	2.1%
Males $\geq$ 1 year old:	26%	24%
Juveniles (< 1 year old):	0%	0%
Total:	8%	8%
Proposed change in post-season population:	-5%	0%

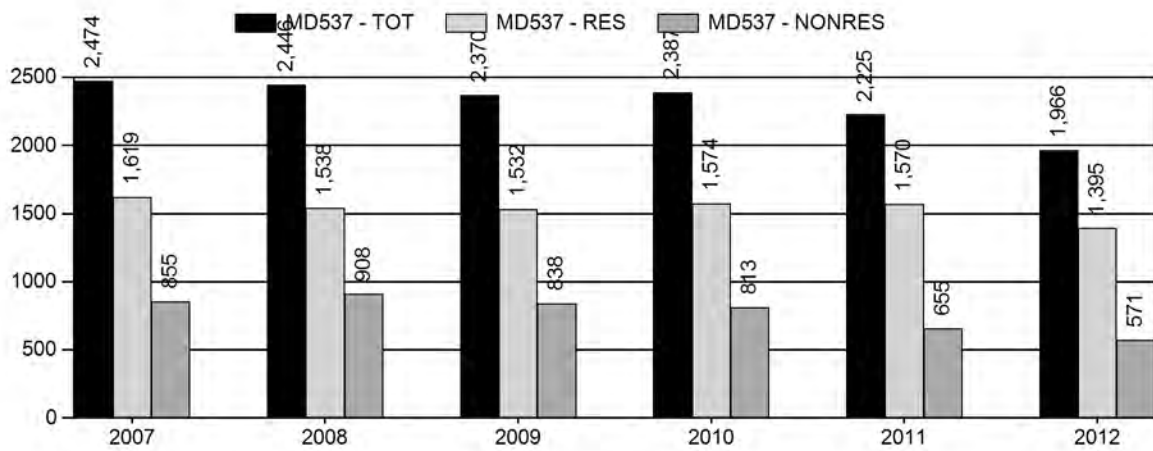
## Population Size - Postseason



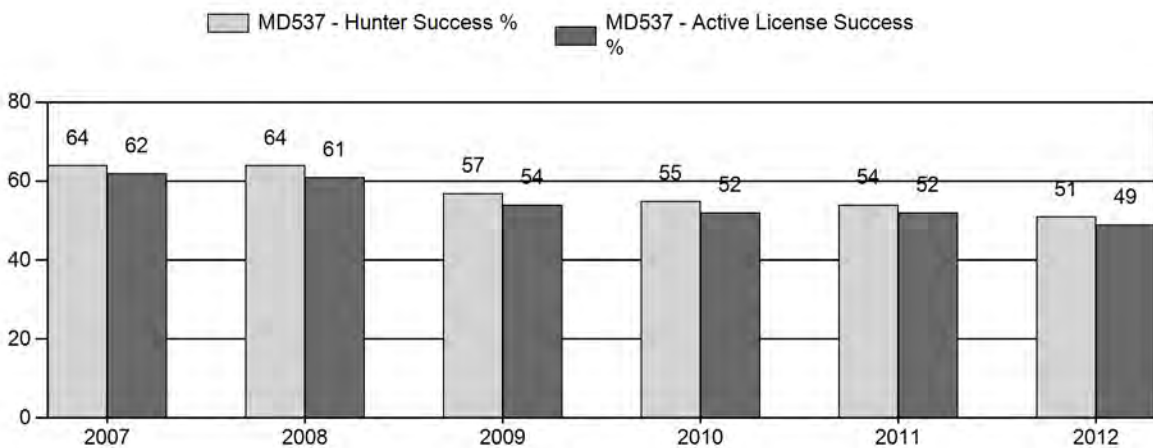
## Harvest



## Number of Hunters

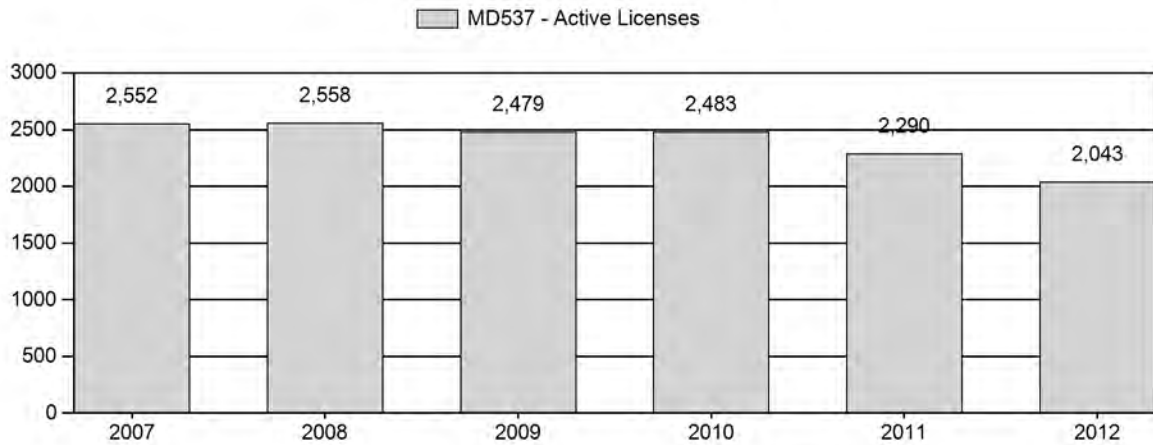


## Harvest Success

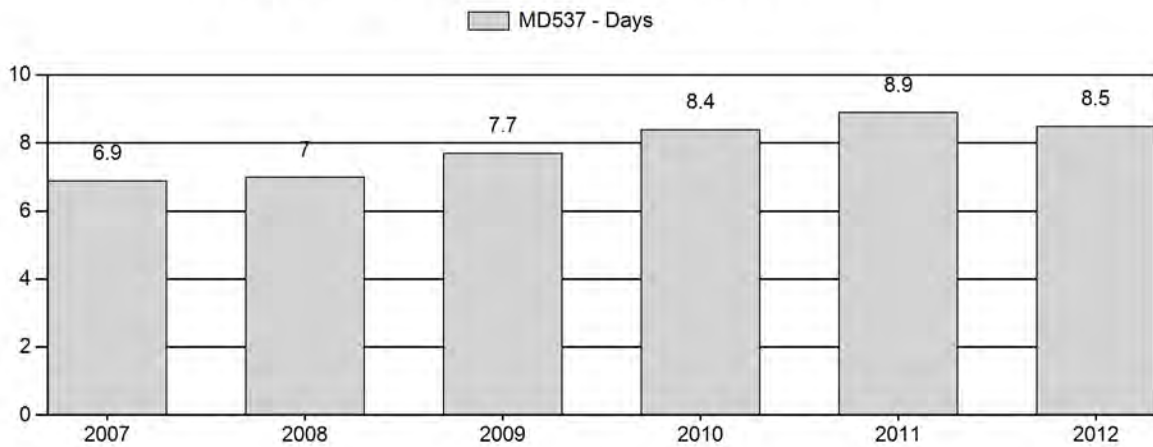




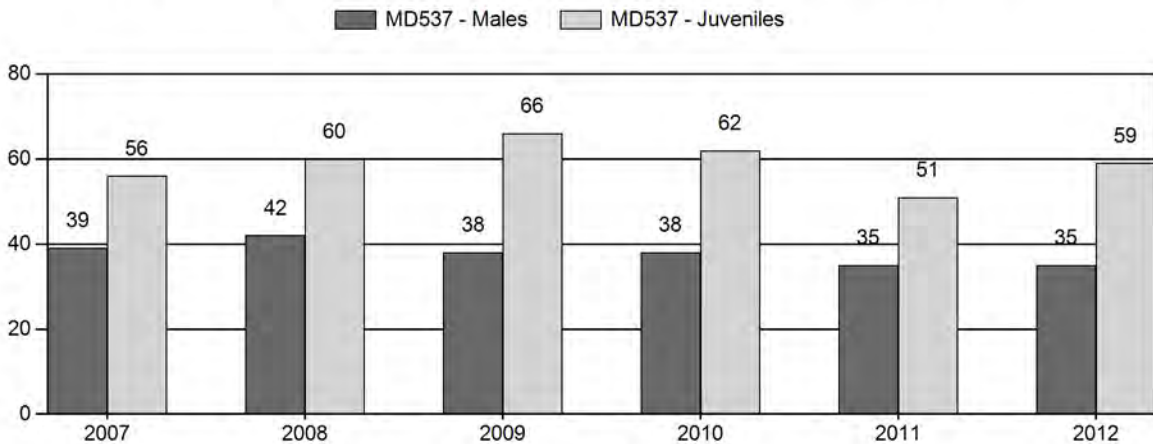
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD537 - LARAMIE MOUNTAINS

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	19,200	96	356	452	20%	1,166	51%	657	29%	2,275	1,214	8	31	39	± 3	56	± 3	41
2008	20,300	101	335	436	21%	1,034	49%	623	30%	2,093	1,180	10	32	42	± 3	60	± 4	42
2009	19,600	155	395	550	19%	1,433	49%	952	32%	2,935	1,245	11	28	38	± 2	66	± 3	48
2010	18,900	205	425	630	19%	1,639	50%	1,015	31%	3,284	1,202	13	26	38	± 2	62	± 3	45
2011	16,300	102	296	398	19%	1,122	54%	570	27%	2,090	1,263	9	26	35	± 2	51	± 3	38
2012	15,600	83	162	245	18%	699	51%	415	31%	1,359	1,218	12	23	35	± 3	59	± 5	44

## 2007 - 2012 Harvest Age Structure

for Mule Deer Herd MD537 - LARAMIE MOUNTAINS

Year	Males									Females									Herd
	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Tot
2007	0	7	9%	72	91%	79	0	5	84	0	0	0%	2	100%	2	0	0	2	86
2008	1	16	12%	117	88%	134	1	1	136	0	2	40%	3	60%	5	0	0	5	141
2009	1	5	6%	84	94%	90	1	1	92	1	0	0%	2	100%	3	0	0	3	95
2010	0	1	4%	18	95%	19	4	1	24	0	1	14%	6	86%	7	0	0	7	31
2011	1	14	14%	67	83%	82	19	4	105	2	0	0%	14	100%	16	5	0	21	126
2012	0	14	22%	48	77%	62	3	2	67	0	0	0%	1	100%	1	0	0	1	68

\* Percent of aged animals (including unaged adults but excluding juveniles) 1 1/2 years old

^ Number of animals two years old and older. Animals aged older than two (excluding unaged adults) are lumped into this two plus category

\*\* Percent of aged animals (not including juveniles or unaged adults) two years old or older

++ includes juveniles

+++ Unaged adults - unaged animals older than yearlings

**2013 HUNTING SEASONS**  
**LARAMIE MOUNTAINS MULE DEER HERD (MD537)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
59		Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer
60	1	Oct. 20	Nov. 5	100	Limited quota licenses; antlered deer on national forest, any deer off national forest; all lands within Curt Gowdy State Park, archery only
	2	Oct. 20	Nov. 5	150	Limited quota licenses; any deer valid off national forest; all lands within Curt Gowdy State Park, archery only
		Nov. 6	Nov. 30		Unused Area 60 Type 1 and Type 2 licenses valid for doe or fawn white-tailed deer valid off national forest; all lands within Curt Gowdy State Park, archery only
	6	Oct. 20	Nov. 30	50	Limited quota licenses; doe or fawn ; all lands within Curt Gowdy State Park, archery only
62		Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer
62,63,64	6	Oct. 15	Oct. 31	250	Limited quota licenses; doe or fawn valid on private land
		Nov. 1	Dec. 31		Unused Area 62,63,64 Type 6 licenses valid for doe or fawn white-tailed deer
63		Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille shall be closed
64		Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Rd 727), shall be closed
	2	Oct. 15	Oct. 25	100	Limited quota licenses; antlered mule deer or any white-tailed deer
73		Oct. 15	Oct. 25		General license; antlered mule deer or any white-tailed deer
Region J Archery		Sep. 1	Sep. 30	1,000	Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
62,63,64	6	+100
<b>Total</b>	<b>1</b>	<b>0</b>
	<b>2</b>	<b>0</b>
	<b>6</b>	<b>+100</b>
	<b>Region J</b>	<b>0</b>

### **Management Evaluation**

**Current Post-season Population Objective: 29,000**

**2012 Post-season Population Estimate: ~15,600**

**2013 Post-season Population Estimate: ~15,600**

### **Herd Unit Issues**

The management objective for the Laramie Mountains Mule Deer Herd Unit is a post-season population objective of 29,000 mule deer. The management strategy is a recreational management with a post-season buck ratio range of 20-29 bucks:100 does. The objective and management strategy were last revised in 2003. A review is scheduled for 2014.

The Iron Mountain and Laramie Peak Mule Deer Herd Units were combined in 2004 to form the Laramie Mountains Mule Deer Herd Unit. It was determined that the boundary of WY Hwy 34 was not a solid boundary between the two herd units and there was more than 10% interchange. Over 70% of the herd unit is comprised of private land. The Laramie Peak National Forest does offer opportunity for general residents and Region J hunters. The Pole Mountain National Forest offers some limited opportunity for hunters that draw an Area 60 Type 1 license (n=100). The majority of hunters and landowners would like to see more mule deer on the landscape. However, given poor habitat conditions, inadequate fawn recruitment and chronic wasting disease prevalence rates dictate this herd will likely remain below desired levels. There has been little urban or industrial development in the last ten years throughout this herd unit. Wind development is scheduled by 2020, to what extent this will have on mule deer remains to be seen. We have been coordinating with the wind industry to collect baseline data and will have the chance to comment on mitigations on occupied habitat disturbance.

### **Weather**

Weather during 2012 and into 2013 was extremely dry and warmer than normal. Portions of Southeast Wyoming received little summer precipitation. Wyoming also experienced one of its more intense fire seasons. The Arapahoe Fire burned approximately 98,000 acres within the Laramie Mountains Mule Deer Herd Unit and in addition there were three other fires within the Laramie Range that burned a total of 19,000 acres. Fire severity was extreme within certain drainages and mosaic in others. Photo-points have been established to monitor plant succession and response. It is expected over time if this fire behaves like previous fires (i.e. Hensel Fire, Reese Fire) the positive outcome will outweigh the negatives. Shrub species (skunkbrush sumac) and aspen started to re-generate this past fall.

Given drought conditions and the extreme fire season fawn ratios (59:100) did manage to remain within the 10-year average of 62 fawns:100 does. However, classification data needs to be interpreted with some caution. The sample size was met, but it was approximately half of what it typically is. In addition one hunt area was not classified and two did not reach their typical sample size. Efforts will be made to increase the sample size for 2013. The winter of 2012-13

has been mild with little snow fall. There have been periods of below normal temperatures but then they swing back to days > 50 degrees Fahrenheit. Ungulates went into the winter in poor body condition as a result of the drought above normal winter mortality could occur if normal or above average winter conditions exist from March to May. The spring/summers of 2010 and 2011 received above normal precipitation that resulted in fawn to doe ratios of 46:100 both years, which was similar to the long term average of 47:100. However, the winter of 2010 experienced above normal precipitation with high snowpack resulting in poor over winter survival. The winter of 2011 was normal within this geographic area. Refer to the following websites for weather data: (websites: <http://www.ncdc.noaa.gov/temp-and-precip/time-series/> and <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html>).

### **Habitat**

Habitat transects have been maintained since 2001. There are 18 transects, some within prescribed fire (n=5) and mowed treatments (n=1). In 2012, mountain mahogany (*Cercocarpus montanus*) stands that were treated by fire or mowed had 4.6 times the leader growth when compared to untreated stands. Bitterbrush had 6 times the leader growth in stands that were treated with fire compared to untreated stands. Leader production in untreated stands decreased by 92% compared to 2011.

The shrubs analyzed on the transects are mountain mahogany (*Cercocarpus montanus*), antelope bitterbrush (*Purshia tridentate*) and skunkbush sumac (*Rhus trilobata*). Long-term data indicates that mountain mahogany and skunkbush sumac are underutilized with little nutrient quality and low leader production. Antelope bitterbrush continues to be an important shrub species that deer key in on during the winter. Fecal analysis indicates that mule deer are using different shrubs along with grasses and forbs throughout the winter, which are: Wyoming sagebrush (*Artemisia tridentate*), Fringed sagewort (*Artemisia frigid*), silver sagebrush (*Artemisia cana*), Goldenrod (*Solidago spp.*) and needleandthread grass (*Stipa comata*). Habitat enhancement project were initiated within the Laramie Range in 2001, with over 11,000 acres treated with prescribed fire, 4,600 acres controlled for cheatgrass (*Bromus tectorum*) and 1,850 acres of Spike herbicide application to improve herbaceous component by reducing sagebrush canopy cover. The reader is referred to the 2012 Strategic Habitat Plan Annual Report for additional habitat information within the Laramie Region ([http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/SHP12\\_AR\\_LARAMIEREGION0004110.pdf](http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/SHP12_AR_LARAMIEREGION0004110.pdf)).

### **Field Data**

This herd has been on a decline since 2008, prior to that it fluctuated around 17,000 mule deer. Fawn recruitment has not remained at the level needed to maintain or increase the population (Unsworth et al. 1999). Therefore minimal doe/fawn licenses have been available to the hunting public. Type 6 licenses that have been issued are to address damage situations. Harvest did slightly decrease this past year, most likely due to deer displaced from fire activity and extreme drought conditions. The satisfaction survey showed that 61 % of the hunters were satisfied or very satisfied which was somewhat surprising based on negative comments received from the field that hunters were having difficulty finding a male deer to harvest.

### **Harvest Data**

Hunter success in 2012 (51%) was slightly lower than the ten-year average of 57% and hunter effort of 8.5 days per harvest was higher than the ten-year average of 7.4 days per harvest. Access has continued to remain about the same and no major industrial developments have occurred. The slightly downward trend in success and upward trend in effort can be contributed to fewer deer in the field. Buck antler classification data was collected for the first time this year. There were 51 deer sampled with 75% Class I, 14% Class II and 12% Class III. This supports sportsmen's comments that older age class deer were hard to find and the majority of the sampled deer were on public land where there are fewer bucks per square mile.

The 2012 post-season population estimate was about 15,600 with the population trending downward. Chronic Wasting Disease has been detected in this herd for well over two decades. The average prevalence rate since 1997 is 23%, contributing towards the suppression of this herd. Management strategy has been very conservative with little doe harvest to try and increase the herd. Approximately 50% of the herd unit is private lands which does affect our ability to provide opportunity.

### **Population**

The "Time-Specific Juvenile and Constant Adult Survival" (TSJ,CA) spreadsheet model was chosen to use for the post-season population estimate of this herd. The model did not have the lowest AIC score of all the models but was only slightly higher and given the better fit of data and perceived population trend by personnel, landowners and hunters this seemed like the most plausible biological defensible model. Adult survival was adjusted to .7-.8 instead of the recommended range of .7-.95 to account for chronic wasting disease prevalence rates. This herd has the second highest prevalence rate (24%) in the state and adult survival rates were adjusted based on initial study results from the South Converse Mule Deer Herd Unit, which has the highest prevalence rate of 32%. Hunters and landowners would like to see an increase in mule deer, but given poor recruitment, CWD and poor habitat conditions an increase in the population does not seem likely in the near future. Given available data this models appears to be a good fit.

Hunting seasons in this herd unit have started on the 15<sup>th</sup> of October and typically run between 10-15 days. Late doe/fawn seasons have been used to address damage situations in lower elevations of private land. Areas 62-64 Type 6 licenses were increased by 100 to address increasing damage problems. Area 60 remains a sought after license for hunters since it gives them a chance to hunt into November when male deer are more susceptible to harvest. With the increase in Type 6 licenses we estimate an additional 60 mule deer will be harvested.

If we attain the projected harvest of 1,040 mule deer (720 bucks, 165 does) and near normal fawn recruitment, the mule deer population will slightly decline and still remain well below the management objective. We predict a 2013 post-season population of about 15,600.

### **Management Summary**

In summary we continue to manage this herd unit in a conservative manner. The 2013 season will run similar to the 2012 season and should maintain a population around 15,600 mule deer. Landowners and sportsmen want more mule deer, and given the current population as it relates to the objective our goal is to increase the mule deer herd. However, given poor habitat conditions, CWD prevalence rates and poor fawn recruitment moving this population towards the objective does not appear realistic. Opportunities to harvest doe mule deer on private land will remain in

place to address localized damage issues. Region J licenses remain undersold even with the reduction from 1,800 to 1,000 for the 2012 season. The same quota will remain for the 2013 season.

Literature Cited:

**Unsworth, JW, Pac DF, White GC, and Bartmann BC:** Mule deer survival in Colorado, Montana, and Idaho. *J. Wildl. Manage.* 63(1):315-326, 1999



INPUT

Species:

Mule Deer

Biologist:

Martin Hicks

Herd Unit & No.:

Laramie Mts Herd

Model date:

02/08/13

☐ Clear form

MODELS SUMMARY				Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	Fit	107	116	<input type="checkbox"/> CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	101	112	112	<input type="checkbox"/> SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	12	130	130	<input checked="" type="checkbox"/> TSJ,CA Model	

Population Estimates from Top Model												
Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Objective		
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males		Females	Total
1993				4684	4678	10480	19842	4637	3200	9646	17483	29000
1994				4087	3759	8916	16762	4087	2452	8703	15242	29000
1995				4879	3250	8250	16479	4873	2191	8208	15372	29000
1996				4525	3318	8132	15975	4517	2411	8110	15039	29000
1997				5429	2976	7534	15939	5425	2190	7515	15130	29000
1998				5373	3337	7596	16306	5373	2358	7576	15307	29000
1999				5678	4304	8479	18461	5678	2779	8466	16923	29000
2000				4772	3359	7908	16040	4770	2072	7888	14731	29000
2001				4517	3646	8299	16462	4517	2531	8258	15307	29000
2002				4802	4058	8639	17499	4802	3036	8609	16447	29000
2003				5922	3389	7848	17159	5922	2287	7816	16025	29000
2004				5071	3550	7973	16595	5057	2439	7860	15356	29000
2005				5834	4227	8564	18624	5830	3007	8510	17347	29000
2006				5749	5029	9431	20210	5733	3672	9382	18787	29000
2007				5560	5437	10005	21003	5539	3895	9831	19265	29000
2008				6142	5609	10357	22108	6104	4162	10130	20396	29000
2009				6385	4972	9747	21105	6366	3678	9582	19625	29000
2010				5857	4888	9611	20356	5849	3631	9445	18925	29000
2011				4481	4262	8914	17658	4458	3113	8775	16346	29000
2012				4761	3710	8241	16712	4758	2736	8111	15604	29000
2013				4822	4189	8489	17499	4811	3061	8346	16218	29000
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

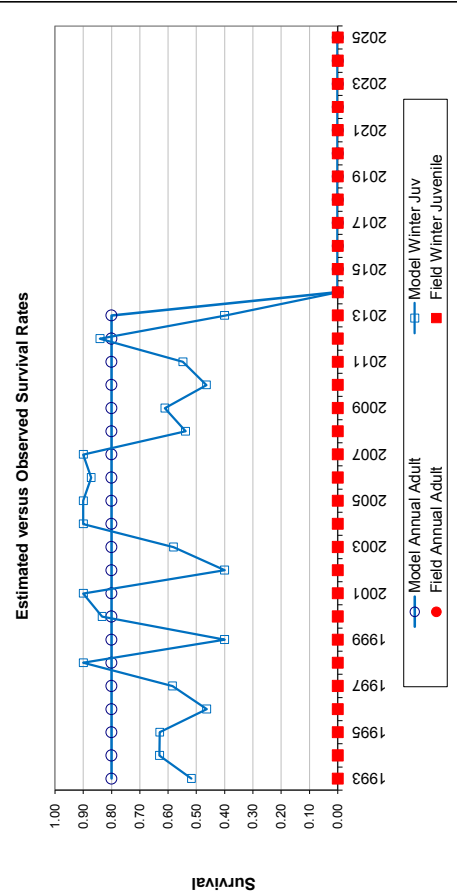
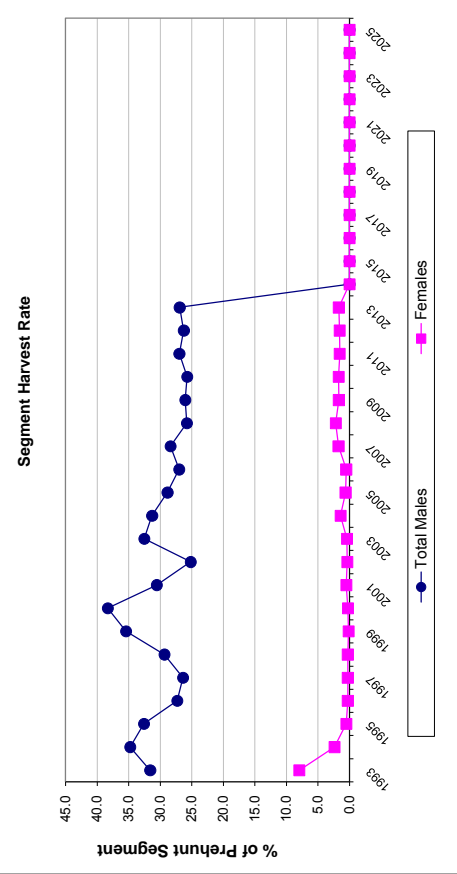
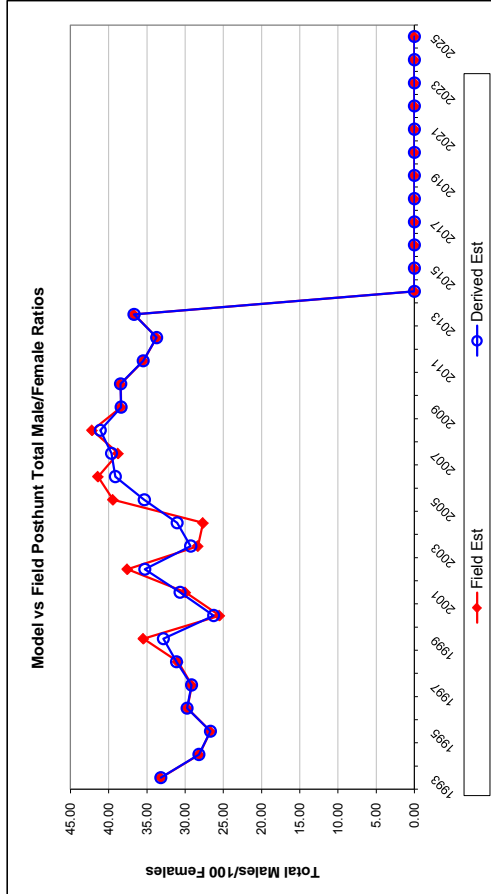
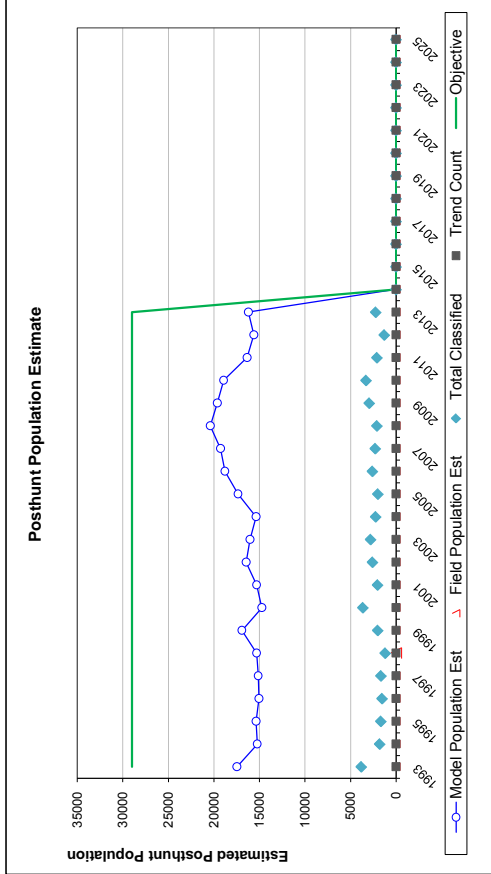
Year	Winter Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.52		0.80	
1994	0.63		0.80	
1995	0.63		0.80	
1996	0.46		0.80	
1997	0.58		0.80	
1998	0.90		0.80	
1999	0.40		0.80	
2000	0.83		0.80	
2001	0.90		0.80	
2002	0.40		0.80	
2003	0.58		0.80	
2004	0.90		0.80	
2005	0.90		0.80	
2006	0.87		0.80	
2007	0.90		0.80	
2008	0.54		0.80	
2009	0.61		0.80	
2010	0.46		0.80	
2011	0.55		0.80	
2012	0.84		0.80	
2013	0.40		0.80	
2014				
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:		Optim cells
Adult Survival =		0.800
Initial Total Male Pop/10,000 =		0.320
Initial Female Pop/10,000 =		0.965

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

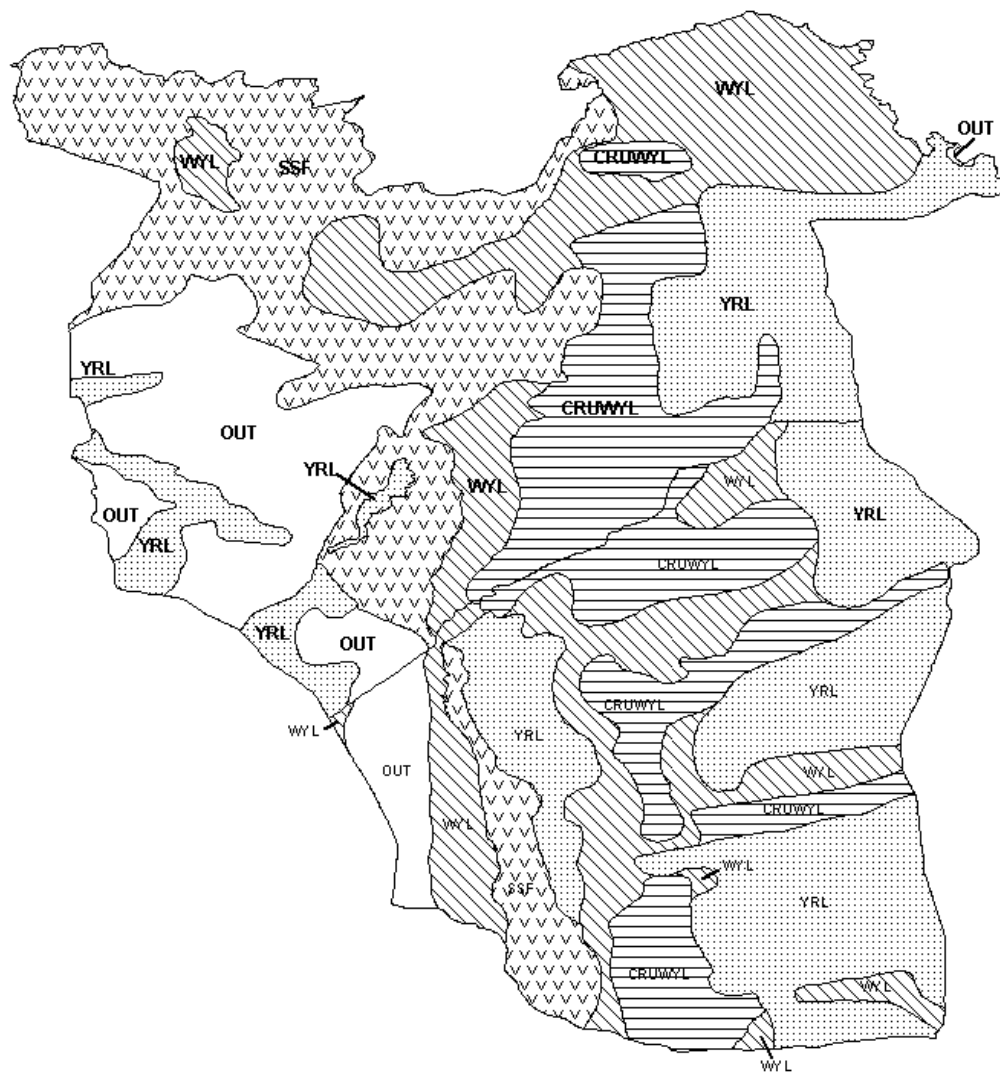
Classification Counts										Harvest			
Year	Juvenile/Female Ratio			Total Male/Female Ratio			Segment Harvest Rate (% of Prehunt Segment)						
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Yrl males	2+ Males	Females	Total Harvest	Total Males	Females
1993	48.07	1.84		33.17	33.17	1.45	43	0	1344	758	2145	31.6	8.0
1994	46.97	2.60		28.18	28.18	1.88	0	0	1188	194	1382	34.8	2.4
1995	60.59	3.31		26.69	26.69	1.95	5	0	963	38	1006	32.6	0.5
1996	55.70	3.24		29.73	29.73	2.16	7	0	824	20	851	27.3	0.3
1997	72.20	3.89		29.15	29.15	2.14	3	0	714	18	735	26.4	0.3
1998	70.92	4.54		31.12	30.95	2.63	0	0	890	18	908	29.3	0.3
1999	67.07	3.36		32.83	35.45	2.20	0	0	1386	12	1398	35.4	0.2
2000	60.47	2.23		26.27	25.50	1.28	2	0	1170	18	1190	38.3	0.3
2001	54.70	2.78		30.65	29.95	1.89	0	0	1013	37	1050	30.6	0.5
2002	55.77	2.55		35.26	37.56	1.97	0	0	929	27	956	25.2	0.3
2003	75.77	3.12		29.26	28.33	1.63	0	0	1002	29	1031	32.5	0.4
2004	64.34	3.02		31.03	27.65	1.74	13	0	1010	103	1126	31.3	1.4
2005	68.51	3.48		35.34	39.44	2.40	3	0	1109	49	1161	28.9	0.6
2006	61.11	2.78		39.14	41.39	2.14	14	0	1234	45	1293	27.0	0.5
2007	56.35	2.75		39.62	38.77	2.15	19	0	1402	159	1580	28.4	1.7
2008	60.25	3.06		41.09	42.17	2.41	35	0	1315	206	1556	25.8	2.2
2009	66.43	2.78		38.38	38.38	1.93	18	0	1177	150	1345	26.0	1.7
2010	61.93	2.47		38.44	38.44	1.80	7	0	1143	151	1301	25.7	1.7
2011	50.80	2.61		35.47	35.47	2.07	21	0	1045	126	1192	27.0	1.6
2012	58.66	3.73		33.73	33.73	2.59	3	0	886	118	1007	26.3	1.6
2013	57.64	2.82		36.68	36.68	2.09	5	0	880	155	1040	26.9	1.7
2014													
2015													
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END



Mule Deer (MD537) - Laramie Mountains  
 HA 59, 60, 62-64, 73  
 Revised - 3/04





## 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD539 - SHEEP MOUNTAIN

HUNT AREAS: 61, 74-77

PREPARED BY: LEE KNOX

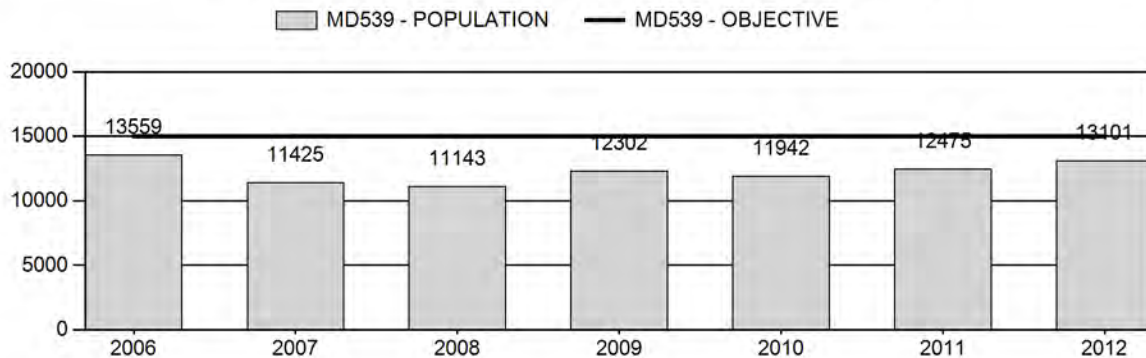
	<u>2007 - 2011 Average</u>	<u>2012</u>	<u>2013 Proposed</u>
Population:	11,857	13,101	13,676
Harvest:	508	416	394
Hunters:	1,981	1,398	1,400
Hunter Success:	26%	30%	28%
Active Licenses:	1,981	1,398	1,400
Active License Percent:	26%	30%	28%
Recreation Days:	9,599	6,788	7,000
Days Per Animal:	18.9	16.3	17.8
Males per 100 Females	28	20	
Juveniles per 100 Females	61	60	

Population Objective:	15,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-12.7%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/13/2013

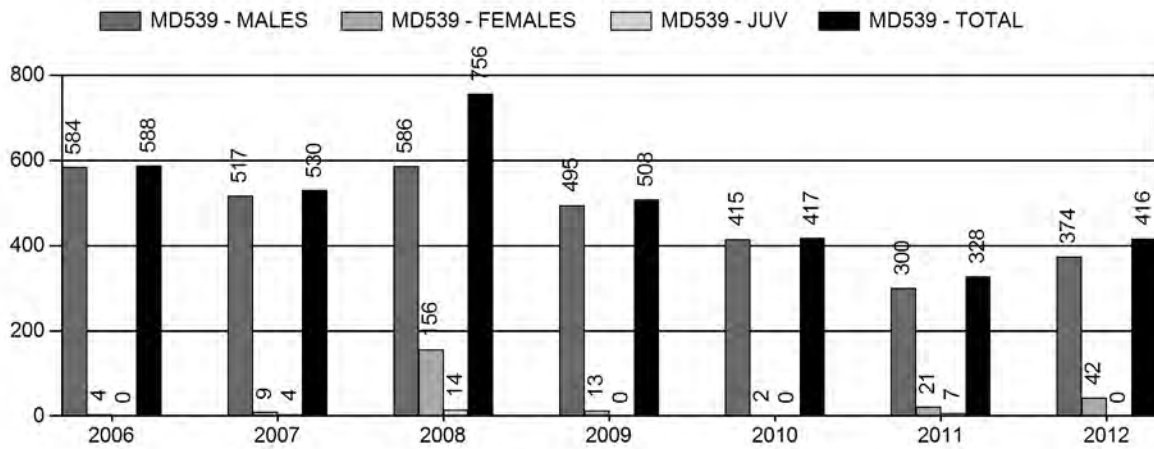
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0.1%	0.1%
Males $\geq$ 1 year old:	6.8%	6%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	1.32%	1.32%
Proposed change in post-season population:	5.3%	5.3%

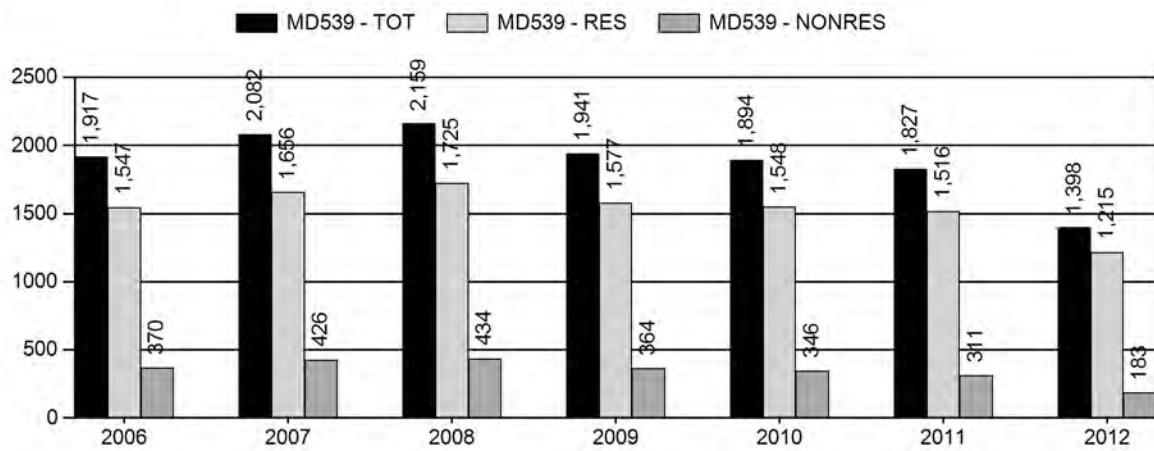
## Population Size - Postseason



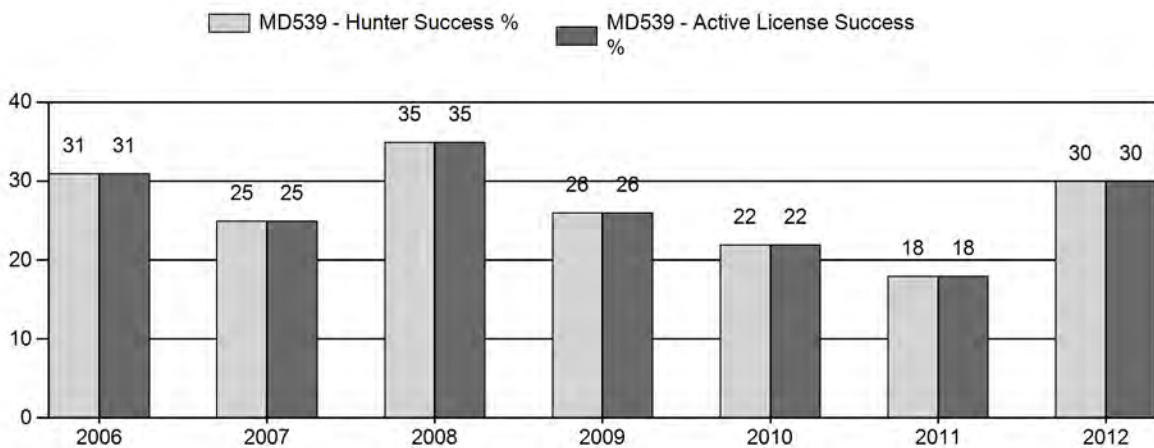
## Harvest



## Number of Hunters

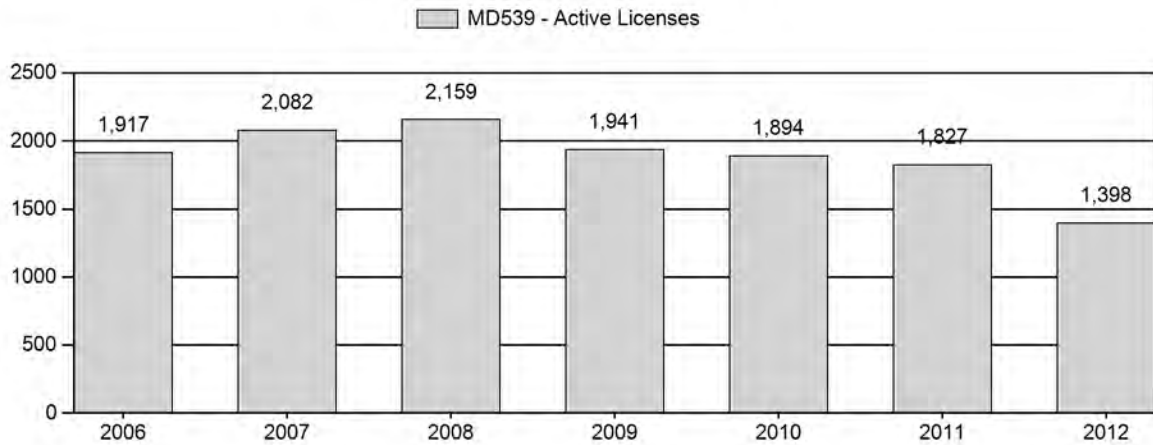


## Harvest Success

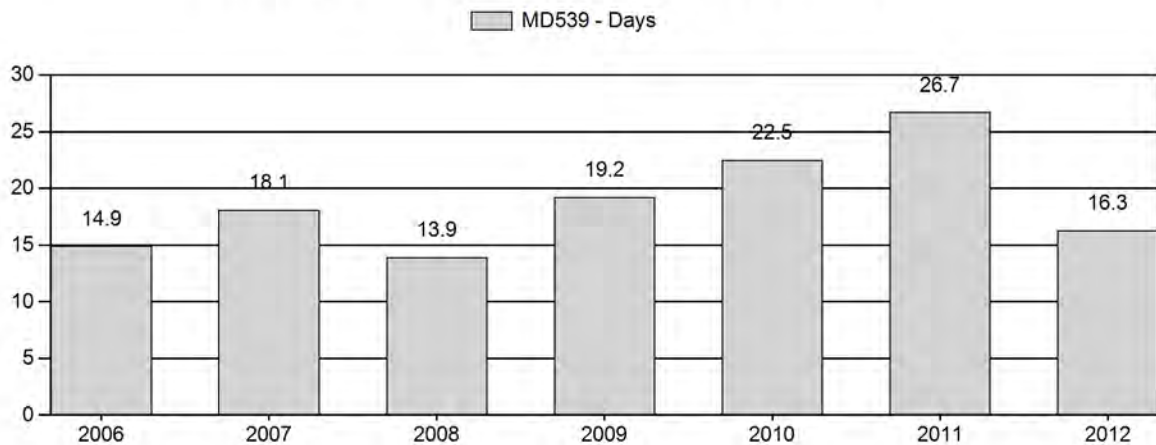




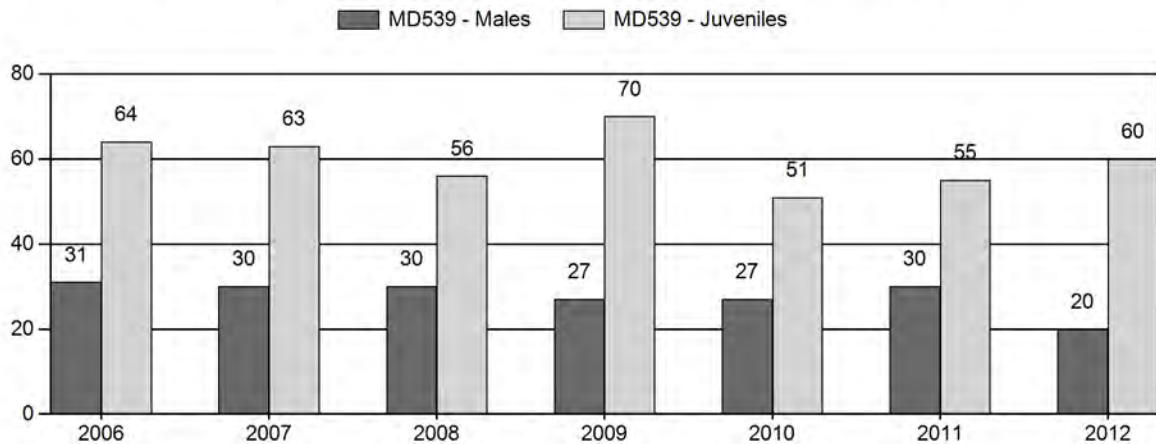
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



## 2006 - 2012 Postseason Classification Summary

for Mule Deer Herd MD539 - SHEEP MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2006	13,559	64	116	180	16%	575	51%	368	33%	1,123	1,233	11	20	31	± 3	64	± 5	49
2007	11,425	76	147	223	15%	754	52%	472	33%	1,449	1,162	10	19	30	± 3	63	± 4	48
2008	11,143	38	93	131	16%	441	54%	247	30%	819	993	9	21	30	± 4	56	± 5	43
2009	12,302	91	134	225	14%	843	51%	593	36%	1,661	1,391	11	16	27	± 2	70	± 4	56
2010	11,942	63	63	126	15%	474	56%	243	29%	843	840	13	13	27	± 3	51	± 5	40
2011	12,475	48	98	146	16%	480	54%	263	30%	889	1,087	10	20	30	± 4	55	± 5	42
2012	13,101	33	52	85	11%	416	55%	249	33%	750	1,047	8	12	20	± 3	60	± 6	50

**2013 HUNTING SEASONS**  
**Sheep Mountain Mule Deer (MD539)**

Hunt Area	Type	Date of Seasons		Quota	Limitations
		Opens	Closes		
61		Oct. 1	Oct. 6		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
74		Oct.1	Oct.6		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
75		Oct.1	Oct.6		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
76		Oct.1	Oct.6		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
77		Oct.1	Oct.6		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
Archery		Sep. 1	Sep. 30	Refer to Section 4 of this Chapter	

**Region D Nonresident Quota: 600**

**Management Evaluation**

**Current Postseason Population Management Objective: 15,000**

**Management Strategy: Recreational**

**2012 Postseason population Estimate: ~ 13,500**

**2013 Proposed Postseason Population Estimate: ~ 14,000**

The management objective for the Sheep Mountain Mule Deer Herd Unit is a post-season population objective of 15,000 mule deer. The management strategy is recreational management which guidelines maintain for buck ratios between 20 to 29 bucks per 100 does. The objective and management strategy were last revised in 1987 and will be reviewed again in 2015.

**Herd Unit Issues**

The Sheep Mountain Herd Unit encompasses Hunt Areas 61, 74, 75, 76 and 77 which vary from mostly private lands with limited access to large portions being public lands. The 2012 post-season population estimate is about 13,500 with the population trending slowly upward from a

low of 11,000 in 2005. Buck ratios remain low in hunt areas with higher public access with a missing cohort of 3 to 4 year old bucks from past winters. Poor habitat conditions continues to be a limiting factor for this herd as well as an increase in rural subdivisions and wind energy development in transitional and winter ranges.

### **Weather**

Weather during 2012 and into 2013 was extremely dry and temperatures were warmer than average. The Palmer Drought Severity Index ranks drought conditions in SE Wyoming as severe and predicts conditions will continue or increase through spring of 2013. The winter of 2012-2013 was mild resulting in good over winter survival. The spring and summer of 2012 was one of the driest on record and we anticipated poor fawn survival; however fawn ratios increased from the previous year of 55:100 does to 60:100 does in 2012. For specific weather information please refer to the following link: <http://www.ncdc.noaa.gov/>.

### **Habitat**

Due to recent changes in staff habitat transects were not read in 2012. Current transects have not always been located in the best locations due to terrain or ownership status. We plan to reevaluate each this spring to improve the quality of data being gathered. The spring and summer of 2012 were severe and little to no new growth was documented by field staff. Most available forage appeared to be growth from 2011. The Squirrel Creek Fire (Figure 1.) started on June 30<sup>th</sup> and burned about 11,000 acres in transitional and crucial mule deer winter range within this herd unit. Habitat within this winter range was old and decadent and we are expecting this fire to greatly benefit this herd in future years. The reader is referred to the Strategic Habitat Plan Annual Report for further background information on shrub transects.

### **Field Data**

Fawn ratios increased from 55: 100 does in 2011 to 60: 100 does in 2012 which was unexpected with current range conditions. Past research has shown that 60 fawns: 100 does may not be high enough recruitment to increase the population. Days to harvest decreased by 10 days to 16 but the season was also shortened by 7 days in 2012. The number of active licenses decreased by a total of 300 residents and 130 non-residents in 2012 which may be due to the poor hunting in this Herd Unit the past few years. Hunter success increased to 30% which is a 12% increase from 2011 but still far below the state wide average of 49%. The hunter satisfaction survey indicated that 55% of hunters were satisfied or very satisfied with their hunt with 21% remaining neutral in the survey.

### **Harvest Data**

This herd is plagued by poor habitat and low fawn ratios. All antlerless seasons have been eliminated except for youth and archery hunters who harvested 40 does and fawns in 2012. Buck ratios remain at the low end of 20 per hundred does and are inflated by the private land dominated hunt areas. High winds in November and December pushed classification flights for both deer and elk in to the first week in January and some bucks may have been misclassified due to the chance they had already dropped their antlers. Field personnel noted hunters and landowners seeing more does and spikes this year indicating we had a good over winter survival of fawns in 2011. Hunters and landowners also comment on more trophy quality bucks than previous years but overall fewer bucks than the past. We are recommending a 3 point or better

restriction for two years to increase buck ratios but we will need moisture and improved habitat conditions to address poor fawn survival and increase the herd.

### **Population**

The Constant Juvenile – Constant Adult Mortality Rate (CJCA) spreadsheet model was chosen for the postseason population estimate of this herd. This is a good model with the lowest AIC value of all the models and the population estimate appears to be reasonable. The model projects an increasing population since 2005. Fawn ratios have ranged widely from the low 50s to the low 70s and could be due to variations in classification sampling effort. Field personnel, landowners and hunters all agree we are below objective and should manage conservatively.

### **Management summary**

If we attain the projected harvest of 400 deer and maintain a fawn ratio over 60 per hundred does the herd should slowly trend upward to the management objective. We predict a 2013 post-season population of about 14,000. The 2012 season was decreased to a 7 day season. With the Platte Valley Mule Deer Herd converting to limited quota for 2013 we will be going to a 6 day season to manage for an increase in displaced hunters. We will also be implementing a 3 point or better restriction herd unit wide for two years to increase buck ratios and address public concerns. The nonresident quota was decreased in region D to 600 licenses to compensate for the Hunt Areas in the Platte Valley that will be limited quota in 2013.

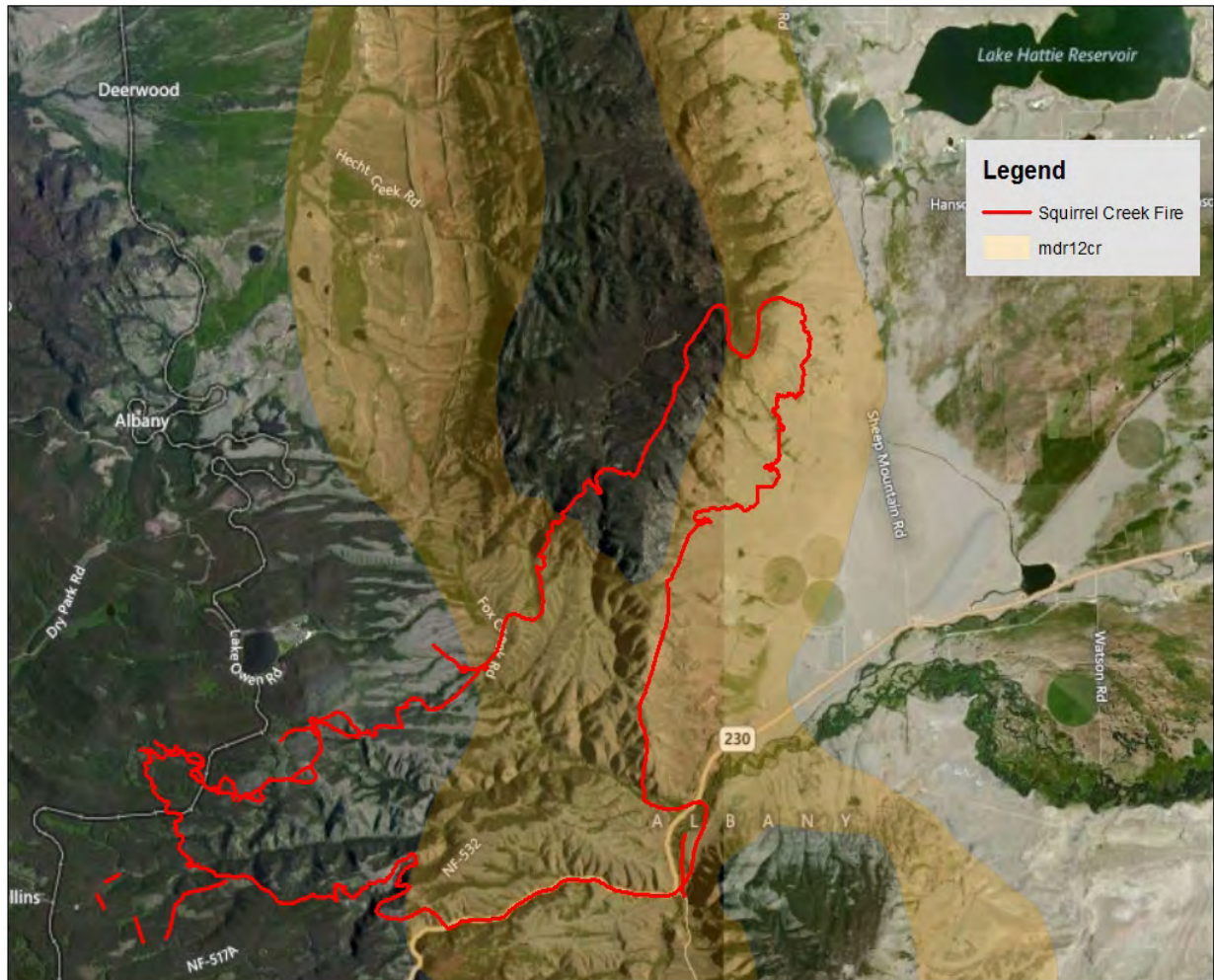


Figure. 1 Squirrel Creek Fire Perimeter with Sheep Mountain Mule Deer crucial winter range.

INPUT

Species:

Deer

Biologist:

Lee Knox

Herd Unit & No.:

MD539 Sheep Mt

Model date:

07/25/12

☐ Clear form

MODELS SUMMARY				Notes
			Relative AICc	Check best model to create report
CJ,CA	Constant Juvenile & Adult Survival	Fit	95	<input checked="" type="checkbox"/> CJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	128	137	<input type="checkbox"/> SCJ,SCA Mod
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	15	122	<input type="checkbox"/> TSJ,CA Model

Population Estimates from Top Model											
Year	Posthunt Population Est.		Trend Count		Predicted Prehunt Population			Predicted Posthunt Population			Objective
	Field Est	Field SE			Juveniles	Total Males	Females	Juveniles	Total Males	Females	Total
1993					2518	1490	5403	2474	864	4948	8286
1994					2612	1310	4986	2612	815	4978	8405
1995					3214	1296	5043	3214	885	5043	9142
1996					3084	1489	5231	3084	1106	5222	9413
1997					3155	1860	5365	3155	1339	5365	9858
1998					3885	1884	5508	3885	1525	5508	10917
1999					3766	2209	5794	3766	1684	5794	11244
2000					4210	2327	6026	4198	1674	6014	11886
2001					3451	2411	6317	3451	1790	6305	11546
2002					4025	2355	6418	4025	1645	6409	12079
2003					3980	2348	6635	3944	1689	6339	11972
2004					3224	2370	6555	3156	1667	6243	11066
2005					2561	2180	6289	2542	1447	6045	10034
2006					3830	1850	5988	3830	1208	5984	11021
2007					3886	1912	6210	3881	1343	6200	11425
2008					3513	2045	6416	3498	1401	6245	11143
2009					4474	2014	6374	4474	1469	6359	12302
2010					3427	2286	6667	3427	1830	6685	11942
2011					3696	2385	6755	3688	2055	6732	12475
2012					4059	2644	6853	4059	2233	6809	13101
2013					4223	2884	7003	4218	2499	6958	13676
2014											
2015											
2016											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est	Model Est	Field Est
1993	0.43		0.90	
1994	0.43		0.90	
1995	0.43		0.90	
1996	0.43		0.90	
1997	0.43		0.90	
1998	0.43		0.90	
1999	0.43		0.90	
2000	0.43		0.90	
2001	0.43		0.90	
2002	0.43		0.90	
2003	0.43		0.90	
2004	0.43		0.90	
2005	0.43		0.90	
2006	0.43		0.90	
2007	0.43		0.90	
2008	0.43		0.90	
2009	0.43		0.90	
2010	0.43		0.90	
2011	0.43		0.90	
2012	0.43		0.90	
2013	0.43		0.90	
2014				
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

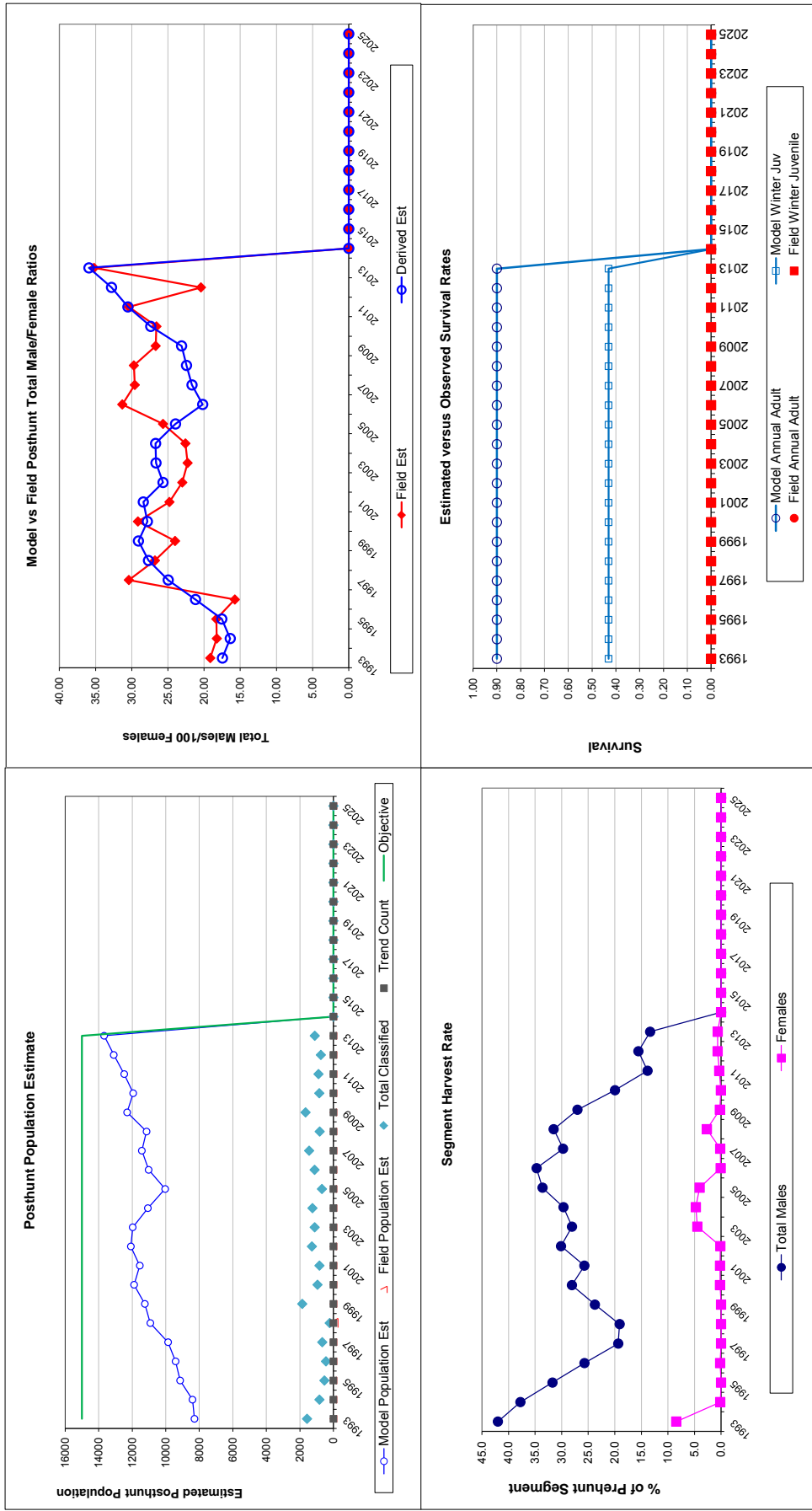
Parameters:		Optim cells
Juvenile Survival =		0.431
Adult Survival =		0.900
Initial Total Male Pop/10,000 =		0.086
Initial Female Pop/10,000 =		0.495

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%



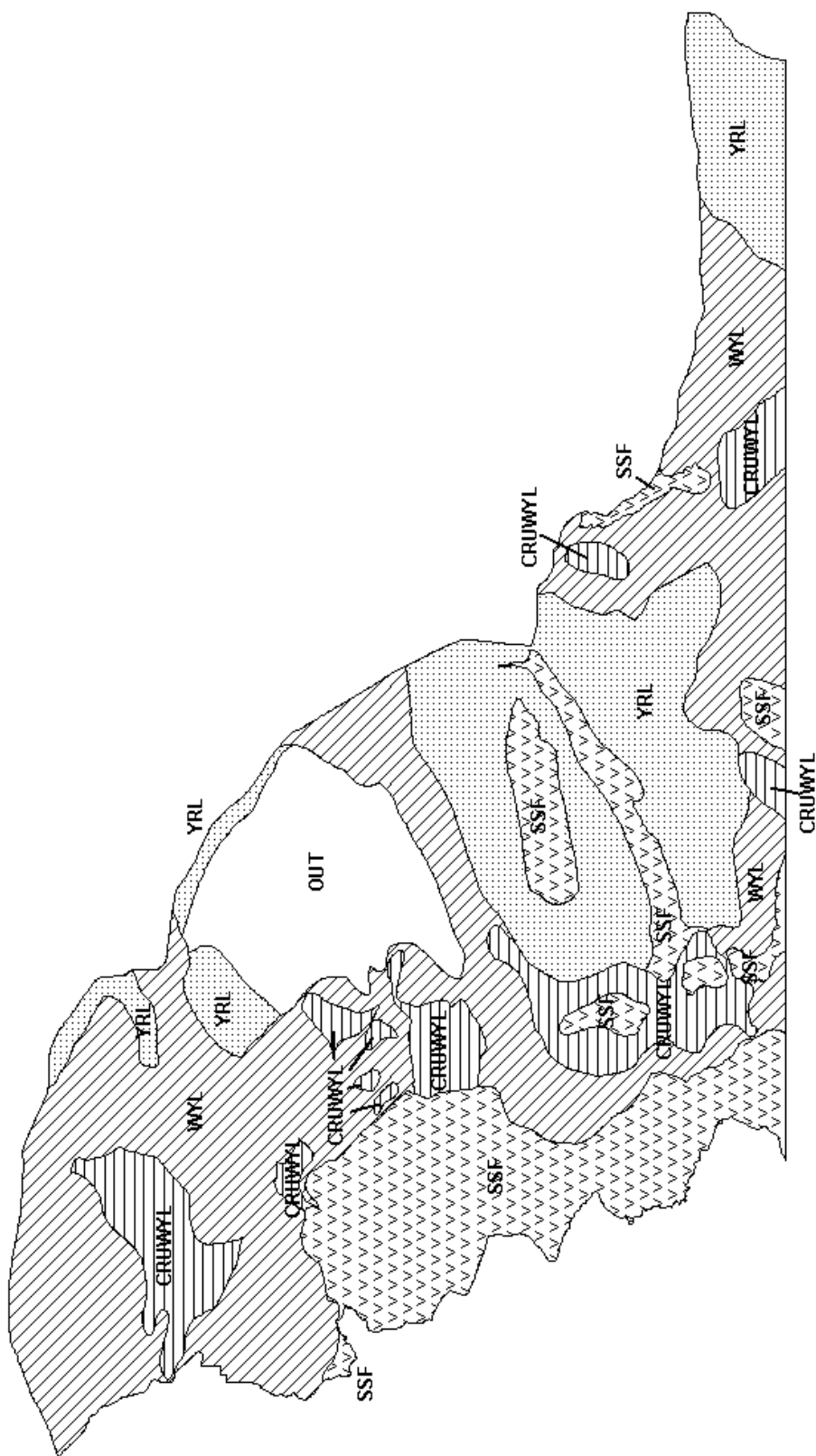
Year	Classification Counts					Harvest				
	Juvenile/Female Ratio		Total Male/Female Ratio			Juv		Males		Total Harvest
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	
1993		50.00	2.84	17.46	19.14	1.57	40	569	414	1023
1994		52.46	4.05	16.38	18.24	2.10	0	450	7	457
1995		63.73	5.95	17.55	18.31	2.71	0	374	0	374
1996		59.06	6.08	21.18	15.75	2.68	0	348	8	356
1997		58.81	5.15	24.95	30.40	3.36	0	292	0	292
1998		70.54	10.36	27.66	26.79	5.51	0	327	0	327
1999		65.01	3.30	29.07	24.01	1.74	0	477	0	477
2000		69.81	4.99	27.83	29.14	2.81	11	594	11	616
2001		54.74	4.27	28.40	24.78	2.58	0	564	11	575
2002		62.81	3.85	25.67	23.01	2.02	0	645	8	653
2003		62.21	4.08	26.64	22.28	2.12	33	599	269	901
2004		50.55	3.25	26.70	22.58	1.96	62	639	283	984
2005		42.05	3.82	23.94	25.67	2.81	17	666	231	914
2006		64.00	4.27	20.19	31.30	2.67	0	584	4	588
2007		62.60	3.67	21.67	29.58	2.25	4	517	9	530
2008		56.01	4.45	22.43	29.71	2.96	14	586	156	756
2009		70.34	3.77	23.11	26.69	2.00	0	495	13	508
2010		51.27	4.04	27.37	26.58	2.66	0	415	2	417
2011		54.79	4.20	30.53	30.42	2.87	7	300	21	328
2012		59.62	4.78	32.79	20.43	2.43	0	374	40	414
2013		60.62	4.14	35.91	35.21	2.90	4	350	40	394
2014										
2015										
2016										
2017										
2018										
2019										
2020										
2021										
2022										
2023										
2024										
2025										

FIGURES



Comments:

END



Mule Deer (MD539) - Sheep Mountain  
 HA 61, 74-77  
 Revised - 8/88



## 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD540 - SHIRLEY MOUNTAIN

HUNT AREAS: 70

PREPARED BY: WILL SCHULTZ

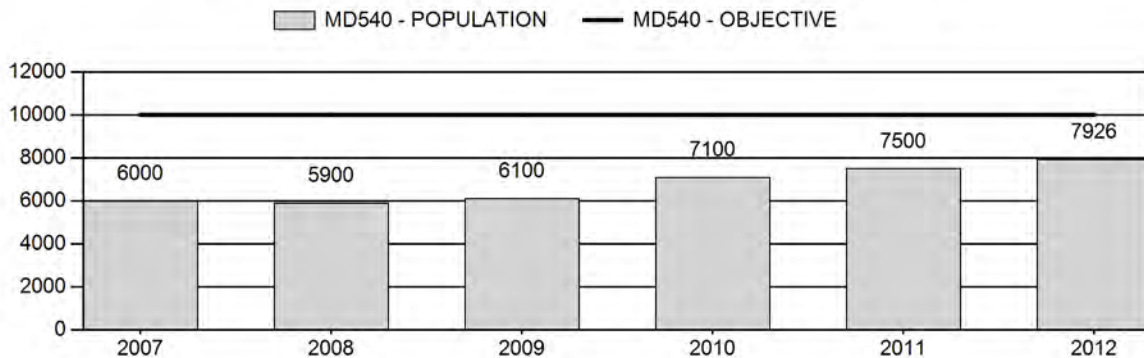
	<u>2007 - 2011 Average</u>	<u>2012</u>	<u>2013 Proposed</u>
Population:	6,520	7,926	7,900
Harvest:	449	299	280
Hunters:	851	715	800
Hunter Success:	53%	42%	35%
Active Licenses:	874	715	800
Active License Percent:	51%	42%	35%
Recreation Days:	3,373	3,210	3,000
Days Per Animal:	7.5	10.7	10.7
Males per 100 Females	29	37	
Juveniles per 100 Females	61	47	

Population Objective:	10,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-20.7%
Number of years population has been + or - objective in recent trend:	20
Model Date:	03/01/2013

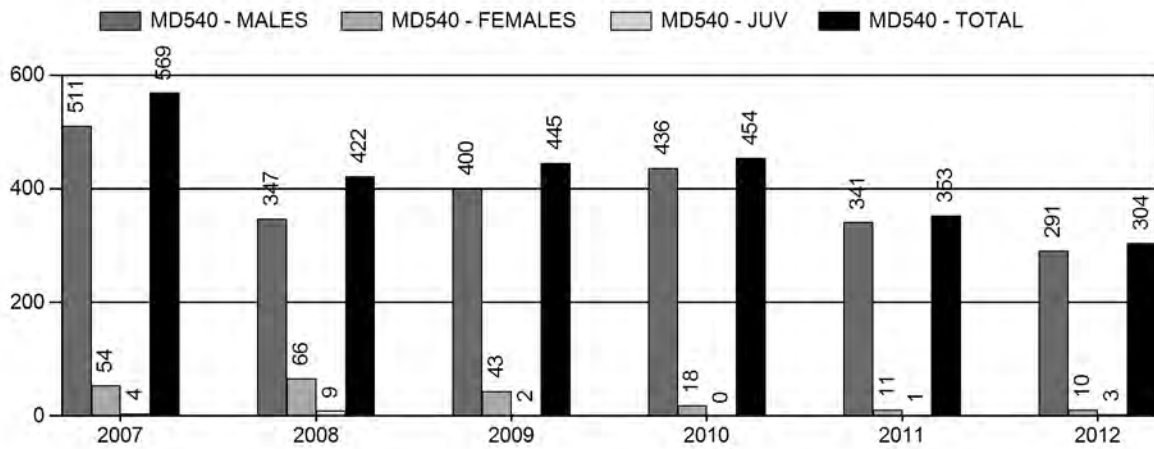
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0.0%	0.7%
Males $\geq$ 1 year old:	15.9%	15.0%
Juveniles (< 1 year old):	0.0%	0.02%
Total:	3.48%	3.4%
Proposed change in post-season population:	-3.8%	-3.7%

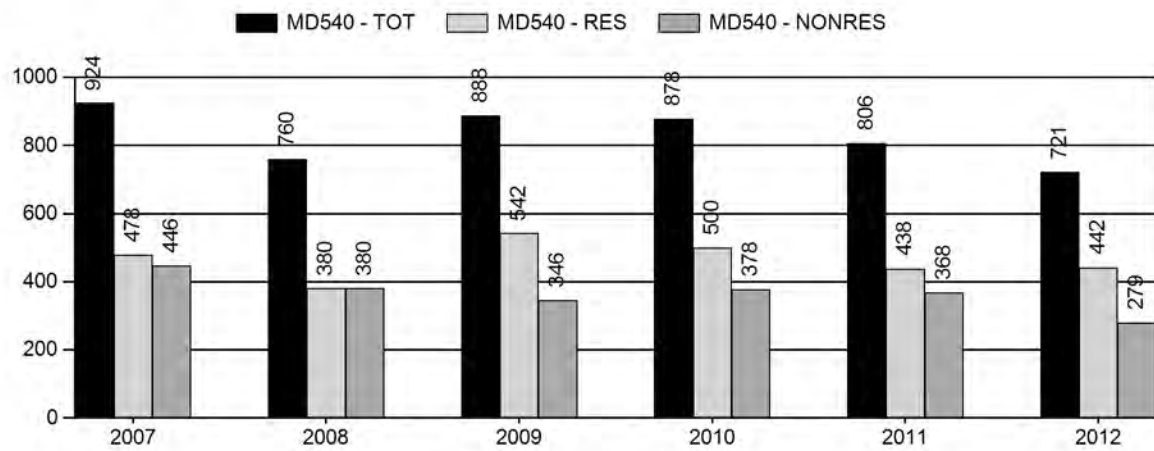
## Population Size - Postseason



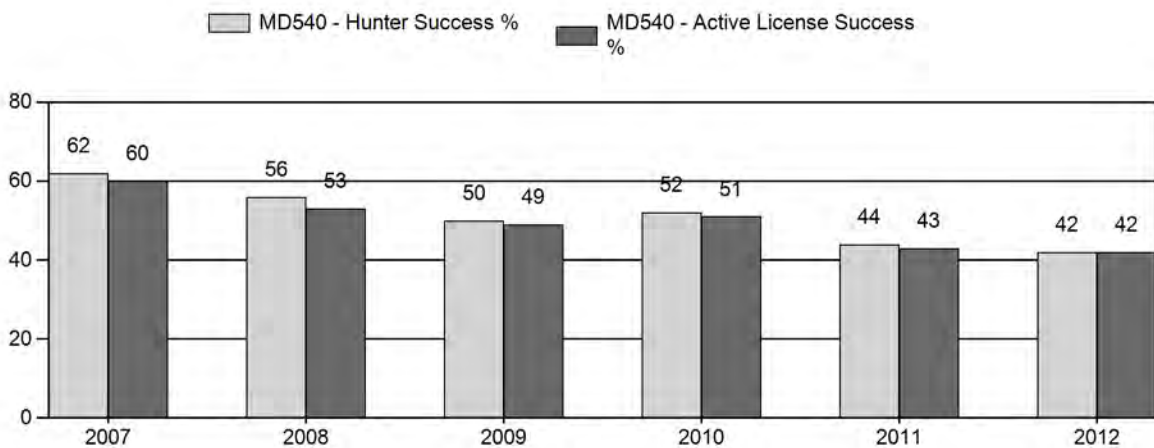
## Harvest



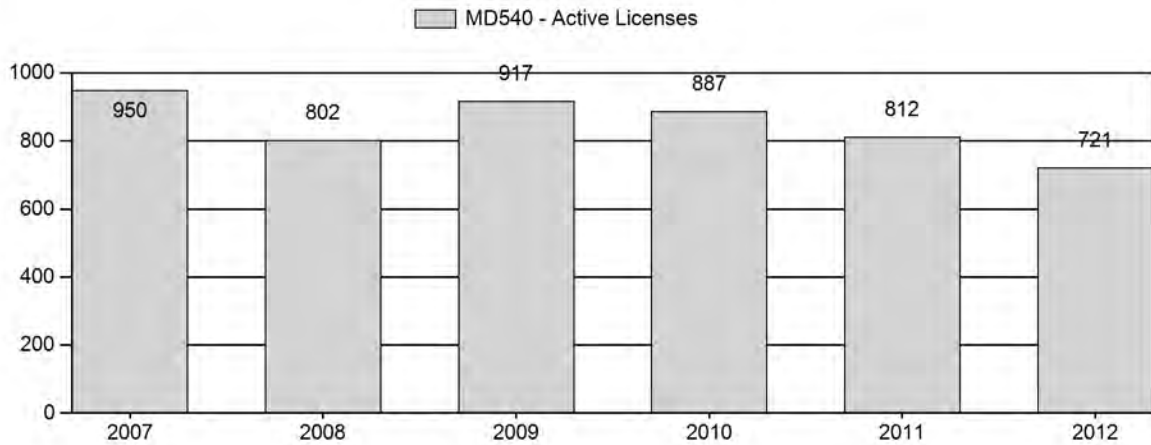
## Number of Hunters



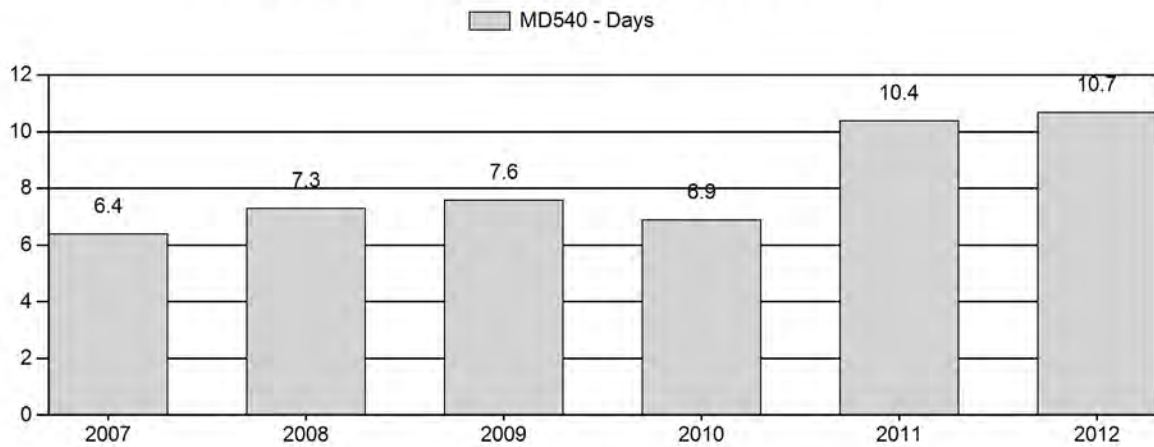
## Harvest Success



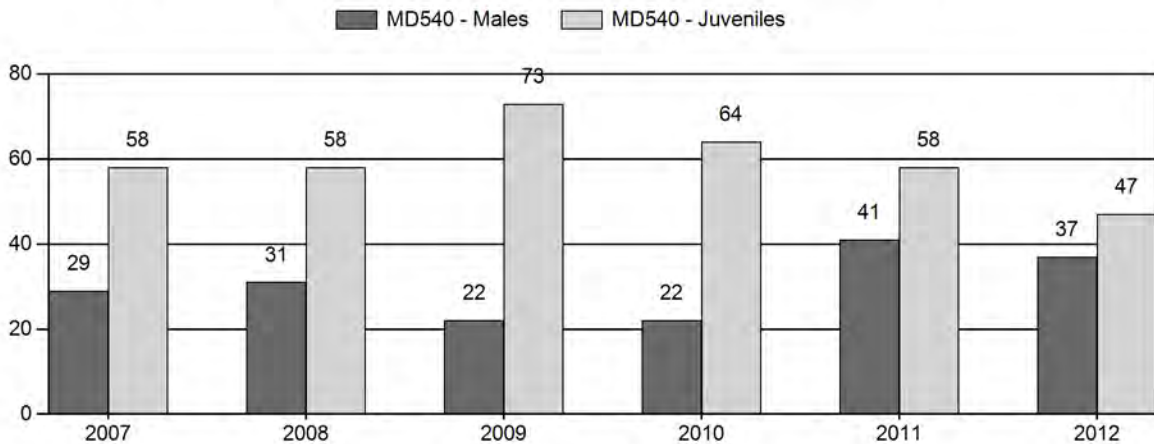
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD540 - SHIRLEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	6,000	45	74	119	15%	410	53%	239	31%	768	995	11	18	29	± 4	58	± 6	45
2008	5,900	26	60	86	17%	276	53%	159	31%	521	963	9	22	31	± 5	58	± 7	44
2009	6,100	10	38	48	11%	216	51%	157	37%	421	913	5	18	22	± 4	73	± 9	59
2010	7,100	24	18	42	12%	190	54%	122	34%	354	958	13	9	22	± 5	64	± 9	53
2011	7,500	29	37	66	20%	162	50%	94	29%	322	1,079	18	23	41	± 7	58	± 9	41
2012	7,926	16	39	55	20%	149	54%	70	26%	274	0	11	26	37	± 7	47	± 9	34



**Shirley Mountain Mule Deer (MD540)**  
**Hunt Area 70**  
**2013 Hunting Seasons**

Hunt Area	Type	Dates of Seasons		Limited Quota	Limitations
Opens	Closes				
70		Oct. 15	Oct. 21		General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer
	6	Oct. 15	Nov. 30	25	Limited quota licenses; doe or fawn valid on private land

Nonresident Region D Quota: 600

Hunt Area	Type	Quota change from 2012
70	6	+25
<b>Herd Unit Total</b>	<b>6</b>	<b>+25</b>

**Management Evaluation**

**Current Management Objective: 10,000**

**Management Strategy: Recreational**

**2012 Postseason Population Estimate: 7,900**

**2013 Proposed Postseason Population Estimate: 7,900**

Mule deer in the Shirley Mountain herd unit are managed toward a numeric objective of 10,000. The population was estimated using a spreadsheet model developed in 2012 and update in 2013. The herd is managed for recreation opportunity. The objective was last reviewed in 1987.

**Herd Unit Issues**

The Shirley Mountain herd unit is comprised of a mixture of habitat and landownership types. Hunter access is considered good to public lands containing mule deer habitat. Mule deer are considered a nuisance and create damage in a localized area on the west slope of Shirley Mountain, along Lost and Sage Creeks. Trends in mule deer numbers are in decline while interest from residents and nonresidents in hunting this herd unit have increased dramatically over the past 5 years. Expansion of wind farms in the eastern half of this herd unit is eminent.

**Weather**

Weather in this herd unit was hot and dry during the past year. This weather pattern most likely had a negative influence on mule deer. For specific meteorological information for the Shirley Mountain herd unit the reviewer is referred to the following links:

<http://www.ncdc.noaa.gov/temp-and-precip/time-series/>

### **Habitat**

Habitat conditions declined in 2012 with a return to drought conditions experienced across the herd unit. No mule deer habitat production/utilization data was available for this herd unit. However, production was assumed poor and utilization high.

### **Field Data**

2012 Postseason classifications were conducted from a helicopter for the first time since bio-year 2005. However, sample size (n=275) from the 5 hour survey was less than adequate. 2012 ratios were 35 bucks and 47 fawns/100does. Classification data had been collected from ground surveys for the past 6-years and had incrementally decreased in sample size while our annual effort had been similar

The preliminary harvest report indicated 721 hunters harvested 304 mule deer in 2012 for an overall success rate of 42%. General license buck harvest decreased 12%. General license hunter numbers decreased 10%, as compared to the 2011 season. The General hunting season length was reduced by 1 day in 2012, to 7 days, in an effort to slow the rate of decline in buck numbers postseason. This reduction in season length appeared to be successful in maintaining both yearling and adult buck ratios

### **Harvest Data**

The CJ,CA model was selected for the Shirley Mountain herd unit. It produced the lowest AICc score but the highest and least plausible population estimate. However, none of the models were considered reliable. The CJ,CA model used juvenile survival rates which continued to hit the lower parameter, even when incrementally increased upward. The general trend in all models is for an increasing population. All models also produced postseason population estimates at magnitudes above what we consider plausible for this herd unit. Harvest rates and the ability to collect an adequate size sample for the postseason classification have decreased in this herd unit.

### **Population**

We assume the true population size to be lower than those produced by the spreadsheet models. The observed trend in mule deer abundance and harvest does not support population dynamics depicted in the new spreadsheet population models.

### **Management Summary**

The 2013 hunting season proposal includes 7 days of General licensed antlered mule deer, 3 points or more on either antler, or any white-tailed deer hunting. The point restriction will provide protection for yearling buck mule deer. Type 6, private land licenses are to reduce damage and nuisance deer issues in the Lost Creek area.

**Bibliography of Herd Specific Studies**

McDaniel G. W., F. G. Lindzey. 1991. Seasonal Movements, Population Characteristics and Habitat Use of Mule Deer in the Shirley Mountain Area, Central Wyoming. Wyoming Cooperative Fishery and Wildlife Research Unit. University of Wyoming, Laramie. 64 pp.

Strickland, D., L.L. McDonald, G. Johnson, and J. Kern. 1992. An Evaluation of Mule Deer Classifications From Helicopter and Ground Surveys. Western Ecosystems Technology, Inc. Cheyenne. 37pp.

INPUT		
Species:	MULE DEER	
Biologist:	SCHULTZ	
Herd Unit & No.:	SHIRLEY MTN 540	
Model date:	03/01/13	

☒ Clear form

MODELS SUMMARY				Notes
			Relative AICc	
			Fit	
CJ,CA	Constant Juvenile & Adult Survival		63	"The lesser of 3 evils"
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival		52	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival		44	

Population Estimates from Top Model									
Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population		Predicted Posthunt Population		Objective	
				Juveniles	Total Males	Females	Total	Juveniles	Total
1993				565	1048	2312	3925	515	2715
1994				876	580	1649	3106	876	2781
1995				1287	486	1703	3477	1287	3250
1996				1308	613	1873	3794	1308	3544
1997				1184	709	2028	3922	1184	3748
1998				1390	823	2126	4339	1390	4133
1999				1356	956	2273	4586	1356	4205
2000				1466	909	2392	4767	1466	4437
2001				1288	946	2528	4762	1288	4394
2002				1765	890	2594	5250	1765	4935
2003				1831	1032	2794	5658	1831	5310
2004				2002	1147	2989	6138	2002	5839
2005				1490	1341	3211	6042	1488	5638
2006				1738	1292	3225	6255	1735	5798
2007				1890	1295	3294	6479	1885	5853
2008				1921	1205	3390	6516	1911	6052
2009				2490	1293	3470	7252	2488	6762
2010				2385	1491	3734	7610	2385	7111
2011				2291	1598	3959	7849	2290	7460
2012				1940	1755	4133	7828	1937	7494
2013				2220	1834	4180	8234	2215	7926
2014									10000
2015									10000
2016									10000
2017									10000
2018									10000
2019									10000
2020									10000
2021									10000
2022									10000
2023									10000
2024									10000
2025									10000

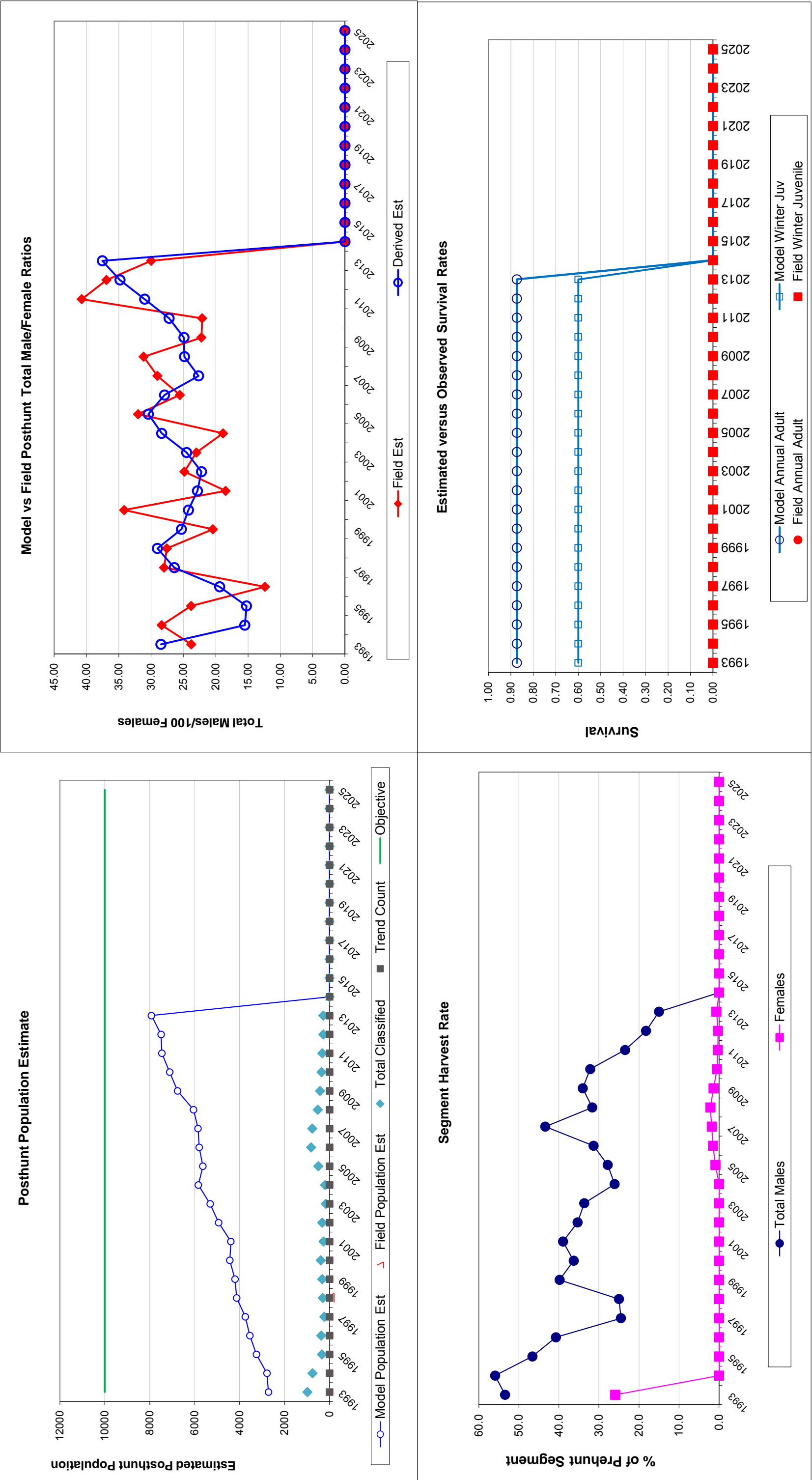
Survival and Initial Population Estimates					
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates		
	Model Est	Field Est	Model Est	Field Est	SE
1993	0.60		0.87		
1994	0.60		0.87		
1995	0.60		0.87		
1996	0.60		0.87		
1997	0.60		0.87		
1998	0.60		0.87		
1999	0.60		0.87		
2000	0.60		0.87		
2001	0.60		0.87		
2002	0.60		0.87		
2003	0.60		0.87		
2004	0.60		0.87		
2005	0.60		0.87		
2006	0.60		0.87		
2007	0.60		0.87		
2008	0.60		0.87		
2009	0.60		0.87		
2010	0.60		0.87		
2011	0.60		0.87		
2012	0.60		0.87		
2013	0.60		0.87		
2014					
2015					
2016					
2017					
2018					
2019					
2020					
2021					
2022					
2023					
2024					
2025					

**Parameters:**  
Juvenile Survival = 0.600  
Adult Survival = 0.873  
Initial Total Male Pop/10,000 = 0.049  
Initial Female Pop/10,000 = 0.171

**MODEL ASSUMPTIONS**  
Sex Ratio (% Males) = 50%  
Wounding Loss (total males) = 10%  
Wounding Loss (females) = 10%  
Wounding Loss (juveniles) = 10%

Classification Counts											Harvest
Year	Juvenile/Female Ratio				Total Male/Female Ratio				Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males Females
1993		30.05	2.47	28.48	23.79	2.15	46	509	545	1100	53.4 25.9
1994		53.13	4.42	15.50	28.37	2.96	0	295	0	295	55.9 0.0
1995		75.60	8.89	15.24	23.81	4.19	0	206	0	206	46.6 0.0
1996		69.80	7.66	19.39	12.38	2.62	0	227	0	227	40.7 0.0
1997		58.40	8.60	26.41	28.00	5.35	0	158	0	158	24.5 0.0
1998		65.38	8.33	29.03	27.56	4.75	0	187	0	187	25.0 0.0
1999		59.67	7.26	25.31	20.44	3.69	0	346	0	346	39.8 0.0
2000		61.31	7.05	24.22	34.17	4.80	0	300	0	300	36.3 0.0
2001		50.96	7.00	22.83	18.47	3.73	0	335	0	335	39.0 0.0
2002		68.05	8.23	22.20	24.85	4.28	0	286	0	286	35.3 0.0
2003		65.52	11.16	24.50	22.99	5.70	0	316	0	316	33.7 0.0
2004		66.98	10.27	28.37	18.87	4.60	0	272	0	272	26.1 0.0
2005		46.76	4.97	30.42	32.01	3.90	2	339	26	367	27.8 0.9
2006		54.63	4.31	27.92	25.55	2.66	3	368	44	415	31.3 1.5
2007		58.29	4.74	22.66	29.02	3.02	4	511	54	569	43.4 1.8
2008		57.61	5.74	24.83	31.16	3.85	9	347	66	422	31.7 2.1
2009		72.69	7.62	24.91	22.22	3.55	2	400	43	445	34.0 1.4
2010		64.21	7.45	27.22	22.11	3.77	0	436	18	454	32.2 0.5
2011		58.02	7.52	30.99	40.74	5.95	1	341	11	353	23.5 0.3
2012		46.98	6.81	34.81	36.91	5.82	3	291	10	304	18.2 0.3
2013		53.33	7.38	37.54	30.00	5.10	5	250	25	280	15.0 0.7
2014											
2015											
2016											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

FIGURES



Comments:

The CJ, CA model produced the lowest AICc score but the highest and least plausible population estimate. The general trend in all models is for an increasing population. However, harvest rates and the ability to collect an adequate size sample for the postseason classification has decreased. We assume the true population size to be lower than those produced by these models. The CJ, CA model used juvenile survival rates continued to hit the lower parameter even when incrementally increased upward.

END





## 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD541 - PLATTE VALLEY

HUNT AREAS: 78-81, 83, 161

PREPARED BY: WILL SCHULTZ

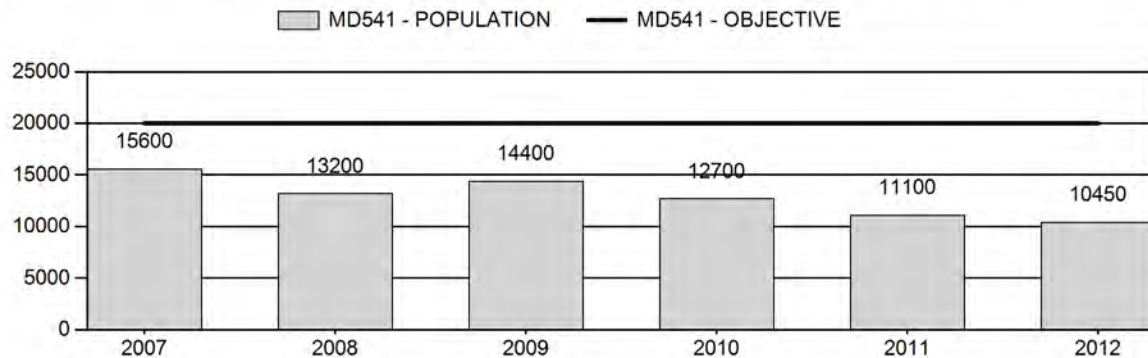
	<u>2007 - 2011 Average</u>	<u>2012</u>	<u>2013 Proposed</u>
Population:	13,400	10,450	9,500
Harvest:	1,138	433	440
Hunters:	3,466	1,706	1,050
Hunter Success:	33%	25%	42%
Active Licenses:	3,549	1,706	1,050
Active License Percent:	32%	25%	42%
Recreation Days:	18,699	8,497	8,000
Days Per Animal:	16.4	19.6	18.2
Males per 100 Females	28	24	
Juveniles per 100 Females	55	56	

Population Objective:	20,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-47.8%
Number of years population has been + or - objective in recent trend:	20
Model Date:	03/01/2013

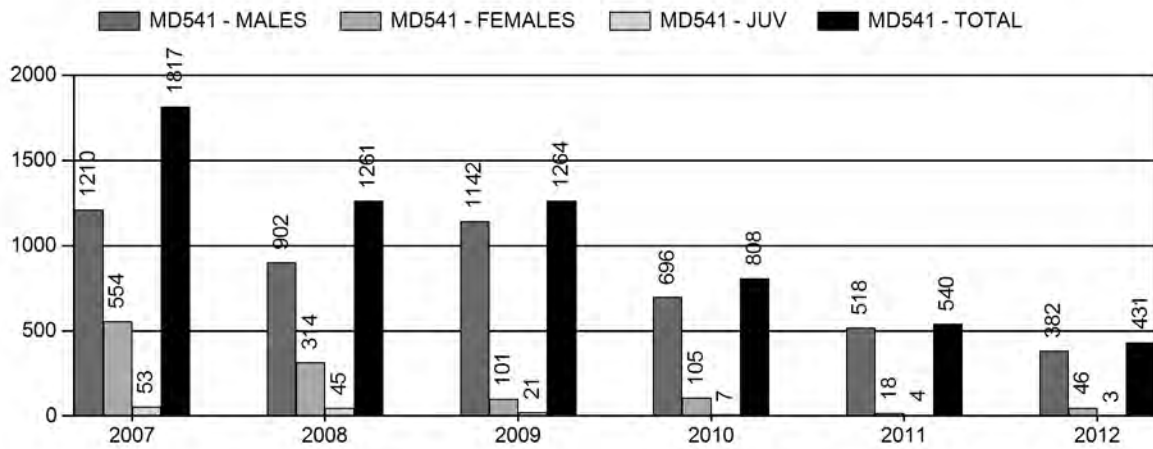
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

	<u>JCR Year</u>	<u>Proposed</u>
Females $\geq$ 1 year old:	0.9%	0.7%
Males $\geq$ 1 year old:	21.0%	23.1%
Juveniles (< 1 year old):	0.1%	0.2%
Total:	3.9%	4.3%
Proposed change in post-season population:	-4.3%	-4.8%

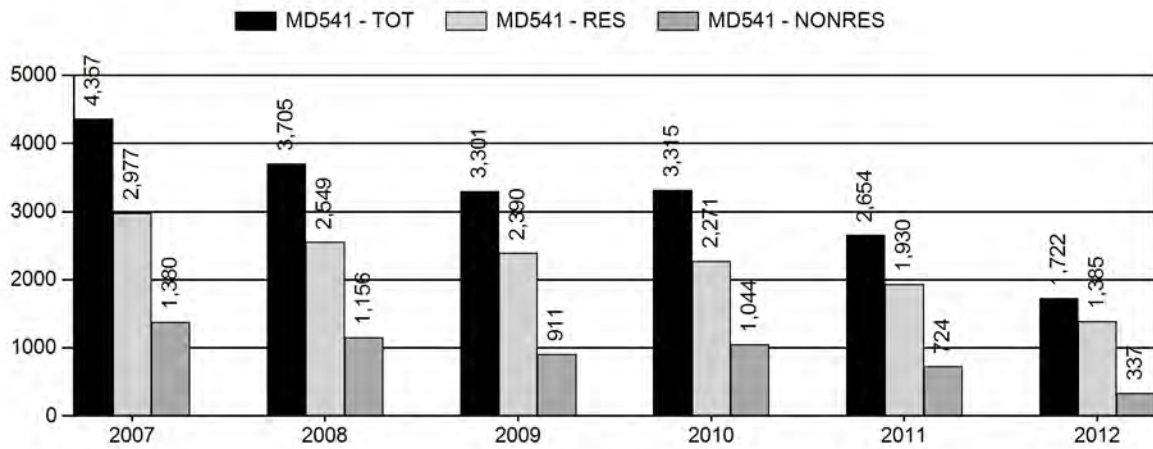
## Population Size - Postseason



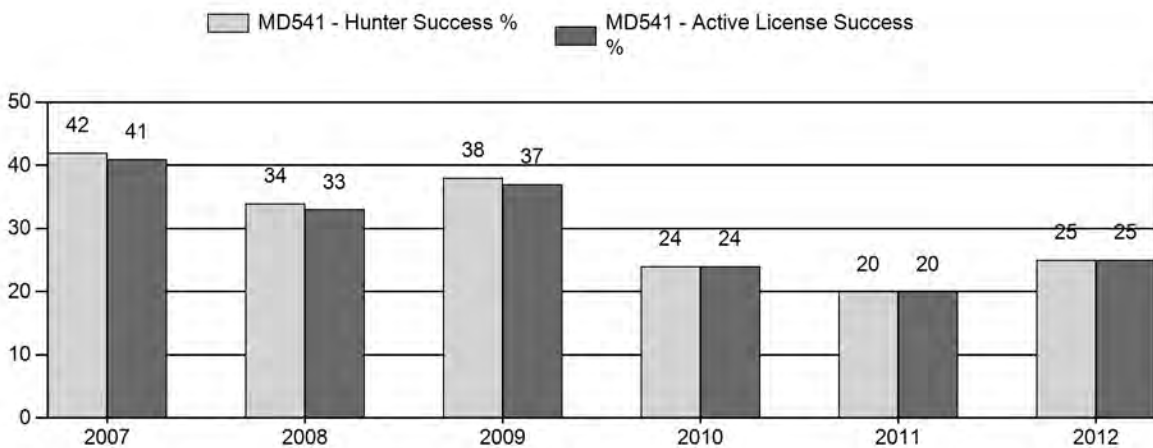
## Harvest



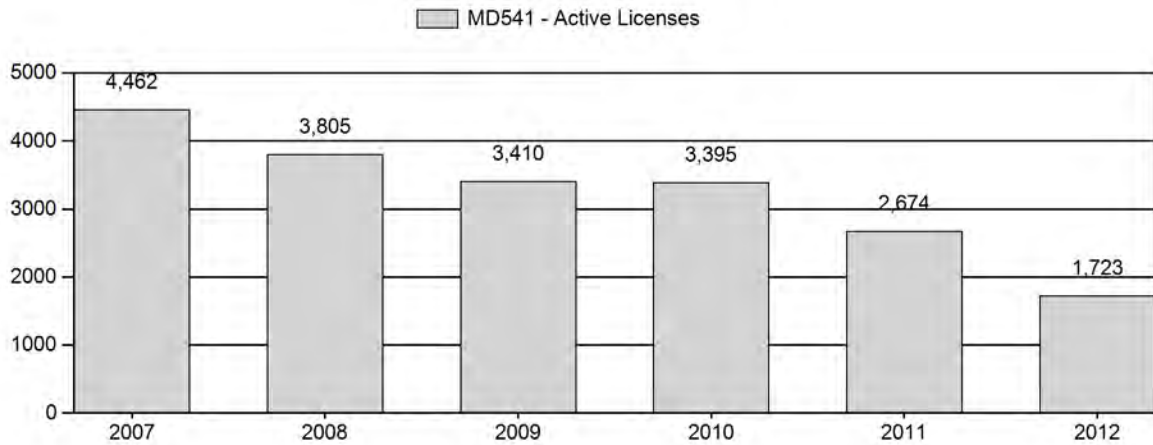
## Number of Hunters



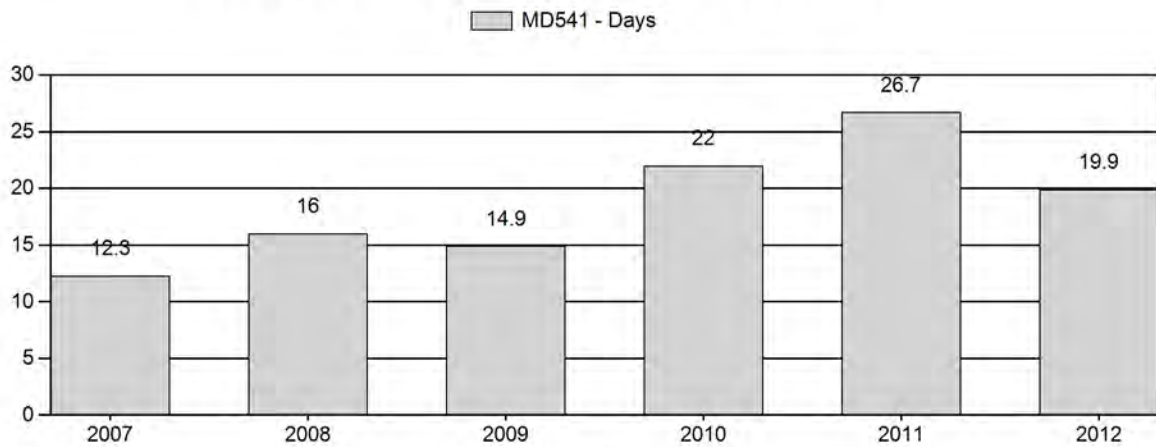
## Harvest Success



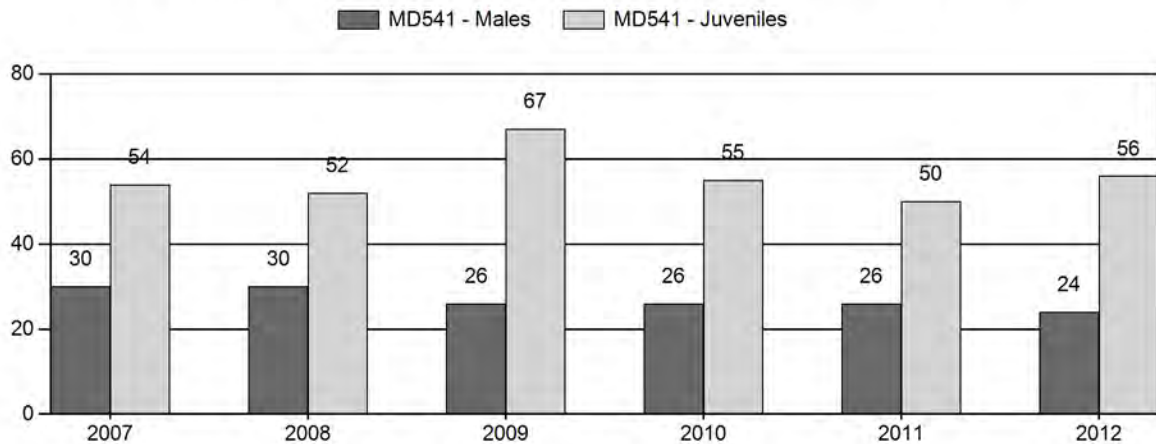
## Active Licenses



## Days per Animal Harvested



## Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD541 - PLATTE VALLEY

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	15,600	262	534	796	16%	2,673	54%	1,451	29%	4,920	978	10	20	30	± 1	54	± 2	42
2008	13,200	199	386	585	17%	1,928	55%	1,003	29%	3,516	1,020	10	20	30	± 2	52	± 2	40
2009	14,400	65	207	272	13%	1,047	52%	700	35%	2,019	1,053	6	20	26	± 2	67	± 4	53
2010	12,700	111	222	333	14%	1,265	55%	701	30%	2,299	1,094	9	18	26	± 2	55	± 3	44
2011	11,100	114	340	454	15%	1,738	57%	865	28%	3,057	0	7	20	26	± 2	50	± 2	39
2012	10,450	65	116	181	13%	768	56%	429	31%	1,378	0	8	15	24	± 2	56	± 4	45

**Platte Valley Mule Deer (MD541)**  
**Hunt Areas 78-81, 83 & 161**  
**2013 Hunting Seasons**

Hunt Area	Type	Dates of Seasons		Limited Quota	Limitations
		Opens	Closes		
78	1	Oct. 1	Oct. 14	300	Limited quota licenses; antlered mule deer or any white-tailed deer
79	1	Oct. 1	Oct. 14	300	Limited quota licenses; antlered mule deer or any white-tailed deer
80, 83	1	Oct. 1	Oct. 14	200	Limited quota licenses; antlered mule deer or any white-tailed deer
81	1	Oct. 1	Oct. 14	200	Limited quota licenses; antlered mule deer or any white-tailed deer
161	1	Oct. 1	Oct. 14	50	Limited quota licenses; antlered mule deer or any white-tailed deer

Hunt Area	Type	Quota change from 2012
78, 79, 80, 81, 83	1	-10
78	1	+300
79	1	+300
80,83	1	+200
81	1	+200
161	1	+50
<b>Herd Unit Total</b>	<b>1</b>	<b>+1,040</b>

**Management Evaluation**

**Current Management Objective: 20,000**

**Management Strategy: Recreational**

**2012 Postseason Population Estimate: 10,500**

**2013 Proposed Postseason Population Estimate: 9,500**

Mule deer in the Platte Valley herd unit are managed toward a numeric objective of 20,000. The population was estimated using a spreadsheet model developed in 2012 and update in 2013. The herd is managed for recreation opportunity. The objective was last reviewed in 1987 and will be updated in 2015.

### **Herd Unit Issues**

Several projects initiated under the Platte Valley Mule Deer Initiative (PVMDI) continued during this past year in this herd unit. Monitoring of 70 radio-collared mule deer continued with the GPS collars slated to drop off in April of 2013 for data retrieval. Sighting survey trials were conducted in February to develop correction rates specific to use of a Jet Ranger type helicopter in Wyoming. A meeting was held in November, in Encampment, to update the public about PVMDI Mule Deer Plan accomplishments.

In the spring of 2012, the Department initiated the Platte Valley Habitat Partnership. This multi-stakeholder partnership is tasked with identifying mule deer habitat improvement needs in the herd unit and collectively developing projects to address those needs. The Wyoming Game and Fish Commission allocated \$500K to be used as match funding to underwrite these mule deer habitat improvement projects.

### **Weather**

Weather in this herd unit was hot and dry during the past year. This weather pattern most likely had a negative influence on mule deer. For specific meteorological information for the Platte Valley herd unit the reviewer is referred to the following links:

<http://www.ncdc.noaa.gov/temp-and-precip/time-series/>

<http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html>

### **Habitat**

Habitat conditions declined in 2012 with a return to drought conditions experienced across the herd unit. No mule deer habitat production/utilization data was available for this herd unit. However, production was assumed to be poor and utilization high.

### **Field Data**

The 2012 Platte Valley Herd Unit postseason classification ratios were 24 bucks and 56 fawns/100 does, based on an adequate sample of 1,378 mule deer. The buck ratio declined from 2011. No significant increase in the number of yearling bucks was observed postseason, even though a 3-point or more limitation should have provided protection from harvest. Field check data from past years indicated on average greater than 25% of the buck harvest consisted of yearling mule deer. The observed fawn ratio was 11% higher than the previous year at 56 fawns/100 does.

### **Harvest Data**

Total harvest in the Platte Valley herd unit decreased 16% in 2012 to 433 mule deer. This harvest rate was attributed to a reduced season length (7 days) and a 3-point or more limitation. Hunter numbers decreased 35% (n=1,722) in 2012. Despite the more conservative hunting season, buck harvest success increased 2% to 22% in 2012. More antlerless deer were harvested in 2012 (n=49) than during the 2011 season (n=22) when 40 Type 6 licenses were issued. A telemetry flight conducted the day before the season

opened indicated a large proportion of the radio-collared deer from the southern portion of the herd unit were still on their summer range in Colorado.

### **Population**

The TSJ, CA spreadsheet model was selected to produce the 2012 postseason population estimate. Although lower fit and AIC scores were obtained from a SCJ, SCA model, some model reviewers were not convinced the results were as plausible as the TSJ, CA model. TSJ, SC model aligned very well with 3 abundance estimates for this herd unit and will provide for an excellent "anchor" for future model development. We also intend to include adult survival rates from radio-collared Platte Valley mule deer in the future to improve model accuracy.

### **Management Summary**

General license mule deer hunting opportunities will not be offered in the Platte Valley Herd Unit for 2013. All mule deer hunting will be controlled through a limited quota license management strategy. The goal of this strategy will be to allocate licenses in an effort to increase harvest success to 40% at the herd unit level. Nonresident Region D deer hunters will no longer be able to hunt in the Platte Valley Herd Unit. Nonresidents, along with residents, will have to apply for the hunt area specific Type 1 licenses. Nonresidents will be eligible to receive up to 20% of the Type 1 licenses in the initial license draw. In 2012, only 340 nonresidents chose to hunt in the Platte Valley. The 2013 Nonresident Region D quota of 600 licenses reflects the loss of opportunity for Region D deer hunters to hunt in the Platte Valley Herd Unit. This reduction is warranted in order to minimize potential over-harvest and hunter crowding issues in those herd units remaining in Region D.

Our objective is to estimate the initial license quotas that will be offered for the dual purpose of converting general hunt areas to limited quota areas in the Platte Valley herd unit and to improve active license success to approximately 40%. We based our estimates on the assumption an inverse linear correlation exists between the number of active licenses and harvest success. In other words, we assumed harvest success increases linearly as the number of licenses issued is reduced. This assumption will not be rigorously met; however it provides the most reasonable method for estimating initial quotas that can be adjusted through adaptive management, based on subsequent years of harvest monitoring. Our quota estimates are also intended to yield the approximate, average harvest levels realized in 2011 and 2012. The following calculation illustrates how we derived the quotas:

An example for Hunt Area 78:

2011 harvest was  $.124 \times 1,014$  licenses = 125.7 deer

2012 harvest was  $.198 \times 625$  licenses = 123.8 deer

Average harvest =  $(125.7 + 123.8)/2 = 124.75$  deer

Estimated licenses to attain 40% harvest success =  $124.75/.40 = 312$

Although the above method provides a reasonable starting point, actual harvest success will be affected by many factors:

- 1) The relationship between numbers of licenses issued and harvest success will likely be non-linear for several reasons:
  - i. Hunter skill and experience varies and a higher ratio of deer to hunters may be needed to increase success of those with less experience.
  - ii. Conversely, limited quota areas may attract more serious hunters who are less likely to harvest a small-antlered deer.
  - iii. The relationship between harvest success and deer densities is likely nonlinear.
- 2) Deer populations are dynamic and can change markedly from year to year. As deer densities, buck:doe ratios, and the ratio of deer to hunters change, harvest success will also fluctuate.
- 3) Weather conditions during the hunting season impact harvest success. Lower success is realized during warm, dry falls whereas much higher success is realized in years with early snowfalls.

Table 1 lists the data used to develop quota estimates. The hunt area quotas listed in the table will provide a conservative starting point for the allocation of limited quota licenses in the Platte Valley herd unit.

**Table1. Past license and harvest data used to determine 2013 Platte Valley Herd Unit Type 1 deer license quotas, Wyoming.**

<b>Hunt Areas</b>	<b>2011 Active Licenses</b>	<b>2011 General Success</b>	<b>2012 Active Licenses</b>	<b>2012 General Success</b>	<b>2013 Quota Estimates</b>	<b>2013 Quotas</b>
78	1014	12.4%	625	19.8%	312	300
79	659	23.1%	412	22.6%	307	300
80, 83 *	548	16.6%	349	27.5%	234	200
81	538	16.0%	337	25.5%	215	200
161	93	57%	131	24.4%	106	50

\* Combined Area 80-83 success calculated as weighted average based on active licenses.

### **Bibliography of Herd Specific Studies**

Newman, J. 1968. Deer Distribution and Movement Studies. Final Report. Wyoming Game and Fish Department, Cheyenne.

Strickland, M. D. 1975. An investigation of the factors affecting the management of a migratory mule deer herd in southeastern Wyoming – the Snowy Range. Ph.D. Dissertation, University of Wyoming, Laramie. 171 pp.

Yost, J. 2009. North Park Deer Movement and Distribution Study Update - March, 2009. Colorado Division of Wildlife, Steamboat Springs. 4 pp.



Wyoming Game and Fish Dept. 2012. 2012 v.110512 Platte Valley Mule Deer Plan.  
Wyoming Game and Fish Department, Cheyenne. 90 pp.

INPUT		
Species:	MULE DEER	
Biologist:	WILL SCHULTZ	
Herd Unit & No.:	PLATTE MD541	
Model date:	03/01/13	

☐ Clear form

MODELS SUMMARY				Notes
			Relative AICc	
			Fit	
CJ,CA	Constant Juvenile & Adult Survival		563	More plausible trend in population dynamics than the SCJ,SCA model.
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival		26	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival		99	

☐ CJ,CA Model

☐ SCJ,SCA Modt

☒ TSJ,CA Model

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1993				4281	2970	10323	17574	4253	1830	9604	15687	20000
1994				5234	2387	8636	16257	5234	1488	8636	15357	20000
1995				4810	2242	7988	15040	4810	1610	7988	14407	20000
1996				4972	2874	8001	15847	4972	1995	8001	14968	20000
1997				4008	2598	7425	14031	4008	2040	7425	13473	20000
1998				4497	3310	7639	15446	4497	2540	7639	14676	20000
1999				5892	4065	8164	18121	5892	2767	8164	16823	20000
2000				6371	4876	9213	20460	6371	2823	9213	18408	20000
2001				5294	4289	9425	19008	5294	2568	9425	17288	20000
2002				6326	4447	9958	20731	6288	2459	9534	18281	20000
2003				5911	3807	9493	19211	5843	2284	9059	17186	20000
2004				5593	4357	9802	19753	5575	2414	9340	17328	20000
2005				6072	4448	10016	20537	6046	2694	9712	18452	20000
2006				5704	4886	10527	21117	5642	3273	9845	18760	20000
2007				4672	3825	9108	17605	4613	2494	8499	15607	20000
2008	12955		163	3904	2928	7754	14585	3854	1936	7409	13198	20000
2009				5031	3202	7601	15834	5008	1946	7490	14444	20000
2010	16892		790	3871	2630	7087	13587	3863	1864	6971	12698	20000
2011	11120		905	3168	2271	6376	11815	3163	1701	6356	11221	20000
2012				3182	2000	5742	10924	3179	1580	5691	10450	20000
2013				2902	1906	5210	10018	2896	1466	5172	9534	20000
2014												20000
2015												20000
2016												20000
2017												20000
2018												20000
2019												20000
2020												20000
2021												20000
2022												20000
2023												20000
2024												20000
2025												20000

Survival and Initial Population Estimates						
Year	Annual Juvenile Survival Rates		Annual Adult Survival Rates			
	Model Est	Field Est	Model Est	Field Est	SE	
1993	0.43		0.80			
1994	0.40		0.80			
1995	0.66		0.80			
1996	0.40		0.80			
1997	0.83		0.80			
1998	0.90		0.80			
1999	0.90		0.80			
2000	0.63		0.80			
2001	0.90		0.80			
2002	0.58		0.80			
2003	0.86		0.80			
2004	0.90		0.80			
2005	0.90		0.80			
2006	0.42		0.80			
2007	0.40		0.80			
2008	0.85		0.80			
2009	0.43		0.80			
2010	0.40		0.80			
2011	0.40		0.80			
2012	0.40		0.80			
2013			0.80			
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

**Parameters:**

Adult Survival =

Initial Total Male Pop/10,000 =

Initial Female Pop/10,000 =

0.804

0.183

0.960

**MODEL ASSUMPTIONS**

Sex Ratio (% Males) =

Wounding Loss (total males) =

Wounding Loss (females) =

Wounding Loss (juveniles) =

50%

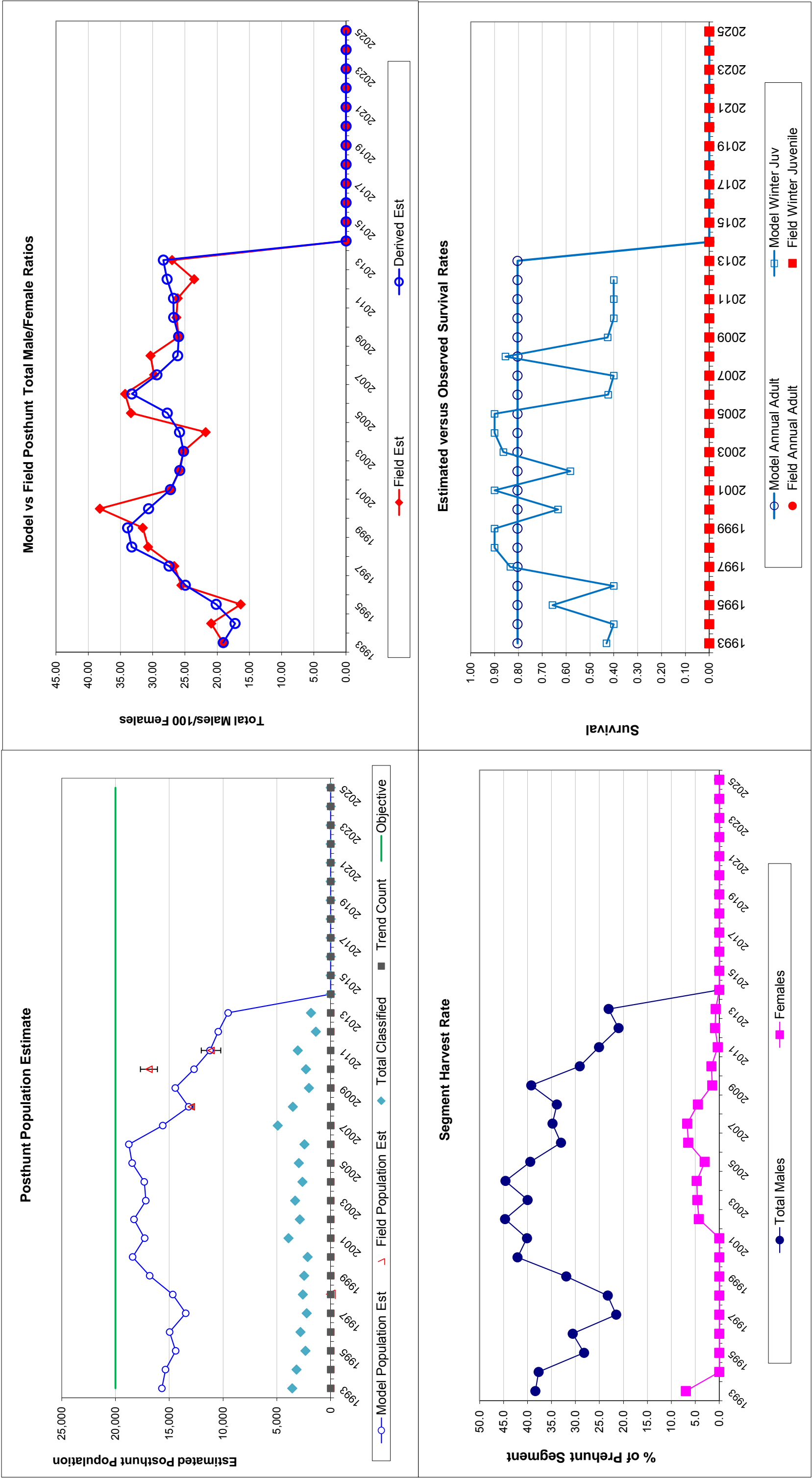
10%

10%

10%

Classification Counts											Harvest
Year	Juvenile/Female Ratio				Total Male/Female Ratio				Segment Harvest Rate (% of		
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males Females
1993		44.29	1.71	19.06	19.06	1.02	25	1036	654	1715	38.47.0
1994		60.61	2.36	17.23	20.93	1.20	0	818	0	818	37.70.0
1995		60.21	2.70	20.15	16.35	1.20	0	575	0	575	28.20.0
1996		62.14	2.60	24.94	25.55	1.46	0	799	0	799	30.60.0
1997		53.97	2.60	27.47	26.66	1.65	0	508	0	508	21.50.0
1998		58.87	2.62	33.25	30.72	1.72	0	700	0	700	23.30.0
1999		72.17	3.20	33.90	31.54	1.85	0	1180	0	1180	31.90.0
2000		69.15	3.36	30.64	38.20	2.26	0	1866	0	1866	42.10.0
2001		56.17	2.03	27.25	27.17	1.27	0	1564	0	1564	40.10.0
2002		65.95	2.71	25.79	25.89	1.48	35	1807	386	2228	44.74.3
2003		64.50	2.47	25.22	25.22	1.35	62	1384	395	1841	40.04.6
2004		59.68	2.57	25.84	21.78	1.35	17	1767	420	2204	44.64.7
2005		62.26	2.58	27.74	33.38	1.72	23	1595	277	1895	39.43.0
2006		57.31	2.66	33.24	34.28	1.90	56	1467	620	2143	33.06.5
2007		54.28	1.77	29.35	29.78	1.20	53	1210	554	1817	34.86.7
2008		52.02	2.03	26.13	30.34	1.43	45	902	314	1261	33.94.5
2009		66.86	3.26	25.98	25.98	1.77	21	1142	101	1264	39.21.5
2010		55.42	2.61	26.75	26.32	1.62	7	696	105	808	29.11.6
2011		49.77	2.07	26.77	26.12	1.38	4	518	18	540	25.10.3
2012		55.86	3.37	27.76	23.57	1.95	3	382	46	431	21.00.9
2013		56.00	2.96	28.34	27.00	1.85	5	400	35	440	23.10.7
2014											
2015											
2016											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											

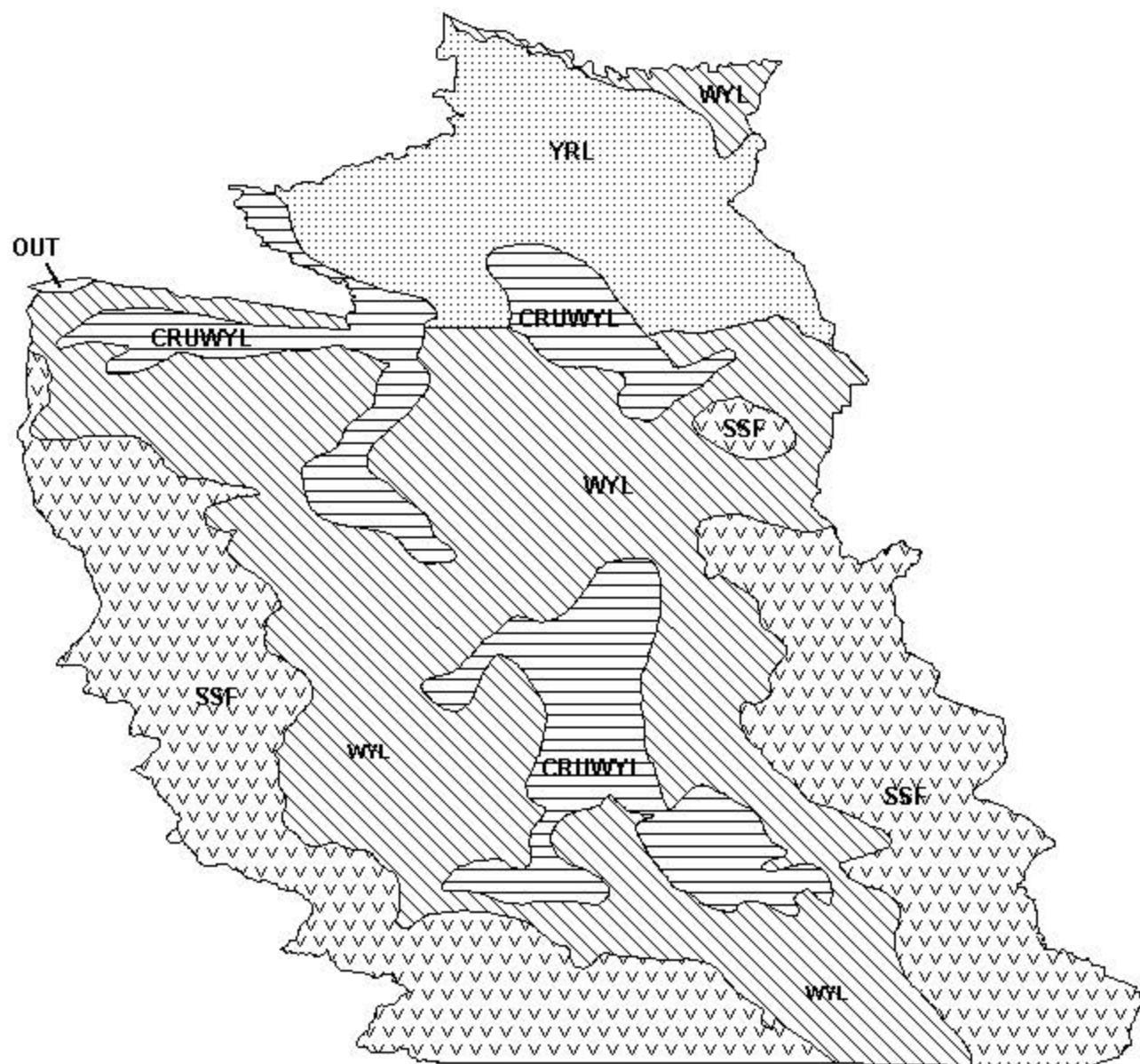
FIGURES



Comments:

The TSJ,CA model was selected to produce the 2012 postseason population estimate. Although lower Fit and AICc scores were obtained from a SCJ,SCA model, reviewers were not convinced the results were as plausible as the TSJ,CA model. TSJ,SC model aligns very well with 3 abundance estimates for this herd unit and provides for an excellent "anchor" for future model development. We also intend to include adult survival rates from radio-collared Platte Valley mule deer in future models to improve accuracy.

END



Mule Deer (MD541) - Platte Valley  
 HA 78-81, 83, 161  
 Revised - 12/87

